ORIGINAL

3033 North Third Street
Suite 1010
Phoenix, Arizona 85012
Office: 602-630-8255
Fax: 602-235-3107

Monica Luckritz
Manager-Policy and Law

ride the light
Qwest

October 19, 2001

Lyn Farmer
Chief Administrative Law Judge
Hearing Division
Arizona Corporation Commission
1200 West Washington
Phoenix, Arizona 85007

Dear Ms. Farmer:

RE: Docket No. T-00000A-00-0194

Pursuant to the Stipulation dated August 7, 2001, enclosed please find one original and ten copies of Qwest's surrebuttal testimony of Robert H. Brigham, Robert J. Hubbard and Joseph Craig.

Please let me know if you have any questions.

Sincerely,

Monica Luckritz

Enclosures

BEFORE THE ARIZONA CORPORATION COMMISSION

WILLIAM A. MUNDELL
CHAIRMAN
JIM IRVIN
COMMISSIONER
MARC SPITZER
COMMISSIONER

IN THE MATTER OF INVESTIGATION	)	
INTO QWEST CORPORATION'S	)	
COMPLIANCE WITH CERTAIN	)	**DOCKET NO. T-00000A-00-0194**
WHOLESALE PRICING REQUIREMENTS	)	**PHASE II A**
FOR UNBUNDLED NETWORK ELEMENTS	)	
AND RESALE DISCOUNTS	)	

SURREBUTTAL TESTIMONY OF

JOSEPH CRAIG

ON BEHALF OF

QWEST CORPORATION

OCTOBER 19, 2001

SURREBUTTAL TESTIMONY OF JOSEPH CRAIG
INDEX OF TESTIMONY

IDENTIFICATION OF WITNESS

Q. PLEASE STATE YOUR NAME, JOB TITLE AND BUSINESS ADDRESS.

A. My name is Joseph Craig. I am employed by Qwest Corporation ("Qwest") as a Director, Technical Regulatory in the Local Network Organization. My business address is 700 W. Mineral, Littleton Colorado, 80120.

PURPOSE OF TESTIMONY

Q. ARE YOU THE SAME JOSEPH CRAIG WHO FILED REBUTTAL TESTIMONY IN THIS DOCKET?

A. Yes I am.

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?

A. I respond to rebuttal testimony of Richard Chandler, filed on behalf of AT&T and WorldCom regarding unbundled packet switching ("UPS"). My testimony responds to Mr. Chandler's incorrect assertions that Qwest has not clearly defined its UPS product and has used inaccurate technical terminology in describing this product.

UNBUNDLED PACKET SWITCHING

Q. IN HIS REBUTTAL TESTIMONY AT PAGE 10, MR. CHANDLER ASSERTS THAT QWEST HAS NOT ADEQUATELY DESCRIBED THE RATE ELEMENTS IT IS OFFERING FOR UNBUNDLED PACKET SWITCHING. IS HIS ASSERTION CORRECT?

A. No. The testimony Qwest has filed in this phase of the docket clearly defines Qwest's Unbundled Packet Switch ("UPS") product. In her direct testimony filed August 31, 2001, at pages 8-9, Kathryn Malone explains that UPS is comprised of: (1) transport facilities between a remote terminal Digital Subscriber Line Access Multiplexer ("DSLAM") and a Qwest central office; (2) DSLAM functionality that provides the capability and programming necessary for data feeds and routing virtual channels; and (3) the Asynchronous Transfer Mode ("ATM") electronics that are needed to generate the virtual channels, which are the temporary channels that UPS uses to route data packets from one location to another. Ms. Malone explains further at pages 9-10 of her direct testimony that Qwest's UPS product provides CLECs with access to the feeder portion of a loop and that there are multiple options available to CLECs to obtain access to the distribution portion of a loop.

In addition to this definition of UPS, at pages 11-12 of her direct testimony, Ms. Malone provides definitions of the specific rate elements that make up Qwest's UPS product. These elements are: (1) the unbundled packet switch customer channel; (2) remote DSLAM functionality at the remote terminal; and (3) the unbundled packet switch interface port at the DS1 or DS3 level. Qwest witness, Robert Brigham, also describes these rate elements in his direct testimony at pages 20-21.

The network components that go into these rate elements are identified in exhibit JPC-1, attached to my testimony, that depicts the network configuration for UPS.

Q. IN CONNECTION WITH HIS ASSERTION THAT QWEST HAS NOT AQEQUATELY DEFINED ITS UPS PRODUCT, MR. CHANDLER STATES AT PAGES 9-11 OF HIS REBUTTAL TESTIMONY THAT YOU HAVE USED IMPRECISE TERMINOLOGY IN DISCUSSING UPS. IS HE CORRECT?

A. No. This incorrect assertion by Mr. Chandler seems to be the result of the fact that he is confusing packet switching with xDSL service. For example, on page 11, line 1 of his rebuttal testimony, Mr. Chandler states that I am assuming that the terms constant bit rate, variable bit rate and unspecified bit rate "describe a user's options with respect to the line rate

available with ADSL service." These terms, in fact, refer to bit rates, not line rates. Mr. Chandler asserts further that these terms "apply to ATM service and not ADSL." This assertion is clearly wrong. Mr. Chandler is overlooking the fact that with ADSL service, customers choose services that have different bit rates. Accordingly, the different types of bit rates that I refer to in my testimony are relevant to ADSL service. Finally, it should be noted that even though ATM itself can give an end-user virtually unlimited bit rates, the physical characteristics of the end user's loop can limit the bit rates that are actually available.

Q. ON PAGE 11, LINE 20 THROUGH PAGE 12, LINE 2, MR. CHANDLER IMPLIES THAT "COMMITTED BIT RATE" IS NOT A PROPER ATM TERM. IS THIS TRUE?

A. No, it is not. Committed bit rate is a term that has been defined by the ATM Forum, as are the terms variable bit rate-real time, variable bit rate-not real time and unspecified bit rate. Consistent with what Qwest is offering to its retail customers, Qwest is offering unspecified bit rate with its UPS product. Unspecified bit rate allows for the maximum utilization of the Qwest DSL network at the proposed UPS rate. However, as Mr. Chandler himself states is in the Qwest Technical Publication 77408, a CLEC may choose to offer a committed bit rate by providing their own DSLAM and virtual channel to their packet switch.

Q. ON PAGE 12, LINES 7 THROUGH 22 OF HIS REBUTTAL TESTIMONY, MR. CHANDLER ASSERTS THAT QWEST'S UPS PRODUCT DOES NOT ALLOW CLECS TO PROVIDE PACKETIZED VOICE TO CLEC CUSTOMERS REQUIRING THEM. IS THIS TRUE?

A. No. While Qwest has not offered a rate element for "packet voice over DSL," the same as voice over DSL, a CLEC is nevertheless free to offer this product on its own. The ability to provide packetized voice service is the function of the customer premises equipment ("CPE"), not the DSLAM or the ATM network.

Qwest provides the permanent virtual channel, or pipe, from an end-user to a CLEC's packet switch. This channel allows the CLEC to provide whatever "0"s and "1"s it desires, whether it is in the form of streaming video, voice over DSL or Voice over Internet Protocol. The important point is that Qwest's UPS product does not limit the products that a CLEC can offer. The type of CPE the CLECs provide at an end-user's premises causes any limitations.

Q. ON PAGE 14, LINES 11 THROUGH 22, MR. CHANDLER CLAIMS THAT QWEST'S USE OF AN OVERLAY TO PROVIDE ADSL, WHILE APPROPRIATE, IS NOT FORWARD-LOOKING. HOW DO YOU RESPOND TO MR. CHANDLER'S CLAIM?

A. He is incorrect. Copper-based DLC will continue to be used within the industry for the foreseeable future. Qwest and other ILECs have developed DSL technology for the copper distribution loop, and that technology remains appropriate for an efficient carrier using forward-looking technologies. It is not realistic to assume, as Mr. Chandler apparently does, that efficient carriers will cease using copper-based DLC; the technology is both prevalent and forward-looking.

In addition, the standards bodies (ANSI T1E1.4) are currently working on developing a technically sound standard regarding spectral compatibility between central office based services and services that are provisioned from a remote location. Qwest's use of an overlay to provide ADSL service took into consideration those distribution areas that were 15.5k ft. or longer from the central office to mitigate any spectrum compatibility issues. As Mr. Chandler knows, 15k ft. is the technical limit for central office based ADSL service.

Q. DOES THIS CONCLUDE YOUR TESTIMONY?

A. Yes it does.

BEFORE THE ARIZONA CORPORATION COMMISSION

WILLIAM A. MUNDELL
CHAIRMAN
JIM IRVIN
COMMISSIONER
MARC SPITZER
COMMISSIONER

IN THE MATTER OF INVESTIGATION	)	
INTO QWEST CORPORATION'S	)	
COMPLIANCE WITH CERTAIN	)	**DOCKET NO. T-00000A-00-0194**
WHOLESALE PRICING REQUIREMENTS	)	**PHASE II A**
FOR UNBUNDLED NETWORK ELEMENTS	)	
AND RESALE DISCOUNTS	)	

EXHIBITS OF

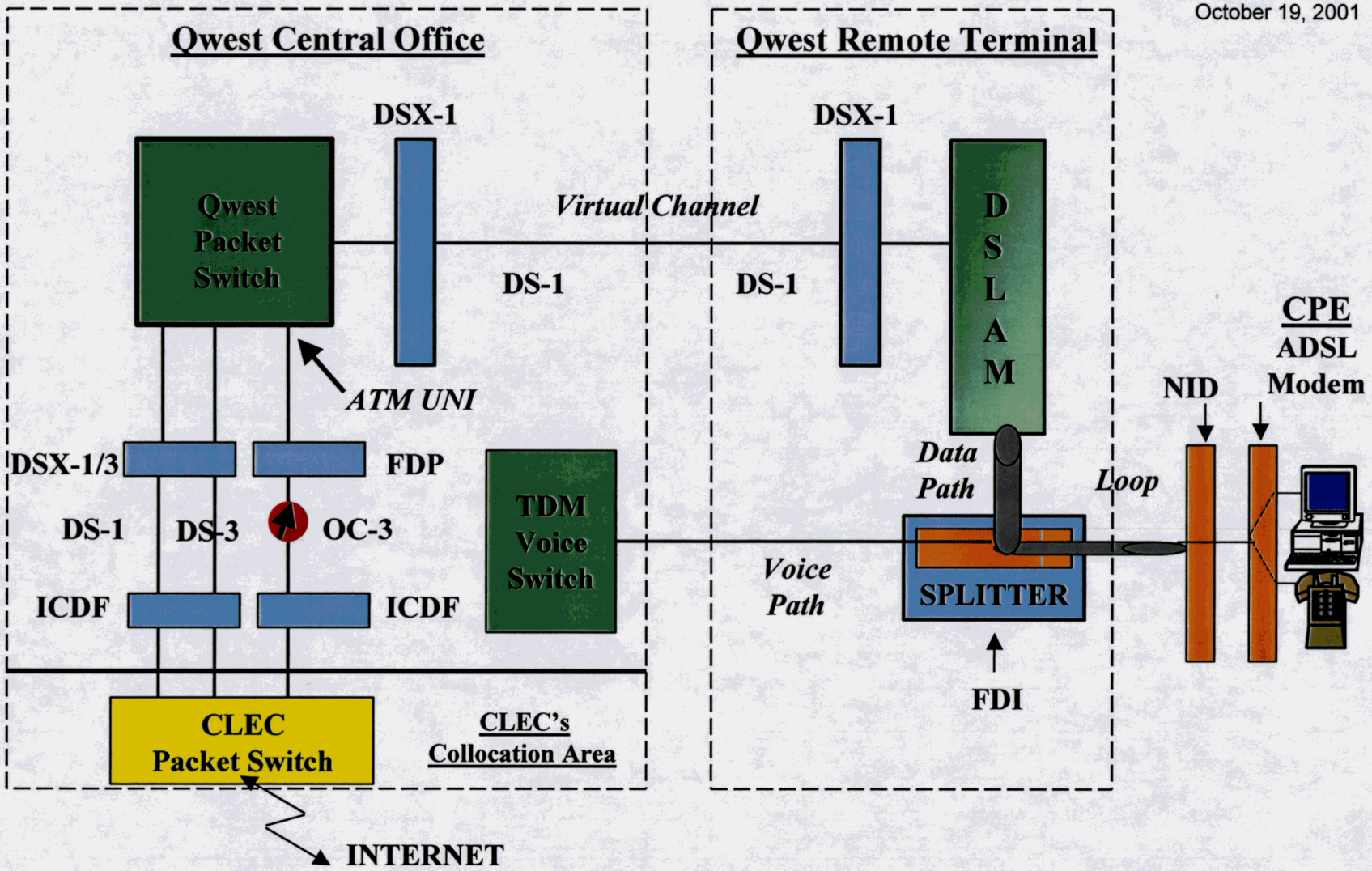
JOSEPH CRAIG

ON BEHALF OF

QWEST CORPORATION

OCTOBER 19, 2001

Arizona Corporation Commission
Docket No. T-00000A-00-0194
Qwest Corporation
Exhibit JPC-1
October 19, 2001



LEGEND

ADSL	**Asymmetrical Digital Subscriber Loop**
ATM	**Asynchronous Transfer Mode**
CPE	**Customer Premise Equipment**
CLEC	**Competitive Local Exchange Carrier**
DS-1/3	**Digital Signal Level 1 or 3**
DSL	**Digital Subscriber Loop**
DSLAM	**DSL Access Multiplexer**
DSX	**DS Cross Connect Panel**
FDI	**Feeder Distribution Interface**
FDP	**Fiber Distribution Panel**
ICDF	**Interconnection Distribution Frame**
NID	**Network Interface Device**
OC-3	**Optical Carrier Level 3**
UNI	**User to Network Interface (ATM Forum)**

BEFORE THE ARIZONA CORPORATION COMMISSION

WILLIAM A. MUNDELL
CHAIRMAN
JIM IRVIN
COMMISSIONER
MARC SPITZER
COMMISSIONER

IN THE MATTER OF INVESTIGATION INTO QWEST CORPORATION'S COMPLIANCE WITH CERTAIN WHOLESALE PRICING REQUIREMENTS FOR UNBUNDLED NETWORK ELEMENTS AND RESALE DISCOUNTS	)	**DOCKET NO. T-00000A-00-0194** **Phase II A** **AFFIDAVIT OF JOSEPH P. CRAIG**
STATE OF COLORADO	)	
COUNTY OF ARAPAHOE	)	

Joseph P. Craig, of lawful age being first duly sworn, deposes and states:

1. My name is Joseph P. Craig. I am Director – Technical Regulatory, Local Networks for Qwest Corporation in Littleton, Colorado. I have caused to be filed written surrebuttal testimony and exhibits in support of Qwest Corporation in Docket No. T-00000A-00-0194, Phase II A.

2. I hereby swear and affirm that my answers contained in the attached testimony to the questions therein propounded are true and correct to the best of my knowledge and belief.

Further affiant sayeth not.

Joseph P. Craig

SUBSCRIBED AND SWORN to before me this 3 day of October, 2001.

Notary Public residing at
Arapahoe, Colorado

My Commission Expires: 4/5/04

DONNA GOLDMAN
STATE OF COLORADO
NOTARY PUBLIC

BEFORE THE ARIZONA CORPORATION COMMISSION

WILLIAM A. MUNDELL
CHAIRMAN
JIM IRVIN
COMMISSIONER
MARC SPITZER
COMMISSIONER

IN THE MATTER OF INVESTIGATION INTO QWEST CORPORATION'S COMPLIANCE WITH CERTAIN WHOLESALE PRICING REQUIREMENTS FOR UNBUNDLED NETWORK ELEMENTS AND RESALE DISCOUNTS	))))))	**DOCKET NO. T-00000A-00-0194 PHASE II A**

SURREBUTTAL TESTIMONY OF

ROBERT J. HUBBARD

ON BEHALF OF

QWEST CORPORATION

OCTOBER 19, 2001

SURREBUTTAL TESTIMONY OF ROBERT J. HUBBARD

INDEX OF TESTIMONY

IDENTIFICATION OF WITNESS

Q. PLEASE STATE YOUR NAME, EMPLOYER AND BUSINESS ADDRESS.

A. My name is Robert J. Hubbard. I am employed by Qwest Corporation, as a Director in the Local Network Organization. My business address is 700 West Mineral, Littleton, Colorado 80120.

Q. BRIEFLY OUTLINE YOUR EMPLOYMENT BACKGROUND.

A. I am a Director of Technical Support in Qwest's Interconnection Strategies Group, the group responsible for the development of strategies to implement the unbundling of Qwest's network as required by the Telecommunications Act of 1996 ("the Act"). I provide technical support regarding unbundling issues to the Qwest Network and Public Policy departments.

I have over 33 years experience with two Regional Bell Operating Companies, Qwest and Indiana Bell Telephone Co, in their network departments. I worked for over 11 years at Indiana Bell and Qwest as a cable splicer and as a cable repairman involved in all aspects of splicing and repairing copper cables. At Qwest, I eventually moved from splicing and repairing into the engineering department as a design engineer for outside plant, designing copper and fiber facilities, and Analog and Digital Carrier Systems. I then went into the planning department as an outside plant planner, in which I planned for future jobs

involving fiber cable placement and upgrades to the existing outside plant network. In 1997, I moved into my present job as a Director in the Interconnection Planning Department.

I have had substantial involvement in Qwest's preparation for line sharing. For example, I studied possible network architectures in advance of Qwest's response to the Federal Communication Commission's ("FCC") First Report and Order and Further Notice of Proposed Rulemaking in Docket No. 98-147 ("Line Sharing Order"). Also, in Minnesota, I participated in the technical trials -- both the Lab and Field Tests -- that were ordered by the Minnesota Commission last year. During both the Lab and Field Tests, I provided technical and engineering input, and evaluated the outcome of the tests.

PURPOSE OF TESTIMONY

Q. PLEASE DESCRIBE THE PURPOSE OF YOUR SURREBUTTAL TESTIMONY.

A. The purpose of my Surrebuttal Testimony is to address the Rebuttal Testimony of Sidney L. Morrison filed on behalf of WorldCom, Inc. regarding remote terminal collocation and "card at a time" collocation. Mr. Morrison's testimony indicates that card at a time collocation is, among other things, a cheap, technologically simple way to permit CLECs to provide Digital Subscriber Line ("DSL") technology to end-users and, therefore, should be ordered in this case. My

testimony explains three points. First, card at a time collocation is technically limited and is not superior to remote terminal collocation, as Mr. Morrison would have this Commission believe. Second, the FCC has not ordered this type of collocation, and this Commission should not order it. Finally, I offer a different methodology to accomplish the same result.

REMOTE TERMINAL COLLOCATION

Q. MR. MORRISON CLAIMS THAT "THERE ARE NO TECHNICAL LIMITATIONS THAT PREVENT ILECS FROM ALLOWING CLECS TO PROVIDE ADVANCED SERVICES OVER DIGITAL LOOP CARRIER EQUIPMENT." IS THIS TRUE?

A. No it is not. First and foremost, not all Digital Loop Carrier ("DLC") systems are technically capable of providing DSL. For example, the widely used Subscriber Loop Carrier ("SLC")–96 cannot, contrary to Mr. Morrison's testimony, support DSL, since it is not technically feasible for CLECS to virtually collocate line cards with DLC and Digital Subscriber Line Access Multiplexer ("DSLAM") facilities. DLC and DSLAM line cards rely on control cards and trunk cards located within the same shelf of the remote terminal as the line cards. Using the DSLAM as an example, the line card performs modem functions, the control card maps virtual channels to individual line cards, and trunk cards aggregate virtual channels for transport back to an Asynchronous Transfer Mode ("ATM") switch. DLC and

DSLAM line cards are connected through integrated backplane wiring of the DLC or DSLAM shelves.

Consequently, there is no physical demarcation between the line card and other system elements without the DSLAM or DLC shelf. This makes isolation of a line card as a stand-alone network element technically impossible. Further, trouble isolation in this scenario is impossible, as there is no "test to" point without demarcation. For reasons I discuss later, it simply will not work to permit a CLEC to substitute its line card in a Qwest remote terminal or to insert a CLEC line card into an empty slot in the terminal. Further, many Qwest DLC systems are not currently configured to provide advanced services.

Q. DOES QWEST HAVE ANY DSL SERVICES PROVISIONED OVER A DLC IN ARIZONA?

A. No.

Q. MR. MORRISON SUGGESTS THAT IT IS A SIMPLE MATTER FOR QWEST TO CONVERT AN EXISTING DLC SYSTEM NOT CURRENTLY CONFIGURED FOR ADVANCED SERVICES INTO ONE THAT IS. IS IT AS SIMPLE AS MR. MORRISON SUGGESTS?

A. No. There are many issues that come into play, such as power, space, adding a new shelf, retrofitting an existing cabinet, the size of the existing pad, and

accommodating rights-of-way. Conversion of existing DLC systems to permit the kind of collocation suggested by Mr. Morrison is not practical.

Q. WHAT WORK WOULD QWEST HAVE TO PERFORM TO PLACE AN ASDL DIGITAL LINE UNIT ("ADLU") INTO AN EXISTING LITESPAN?

A. First, it would be necessary to conduct an evaluation to determine if fiber facilities are available to the ATM switch. If no facilities were available, then Qwest would have to install them.

Next, Qwest would have to perform a card upgrade to increase the memory capacity of the DLC Central Processing Unit ("CPU"). After upgrading the memory, Qwest would have to buy and load the DLC operating software. After completing the software upgrade, it would be necessary to add two ATM Bank Control Unit ("ABCU") cards to the DLC to provide the fiber connection mentioned above from the DLC to the ATM switch. An ATM switch port would then be assigned, and the fiber would be connected to the ATM.

As this description shows, Mr. Morrison has oversimplified the process of converting an existing Next Generation Digital Loop Carrier ("NGDLC") to permit it to provide advanced services.

Q. AT PAGE 9, LINES 8 THROUGH 13 OF HIS REBUTTAL TESTIMONY, MR. MORRISON CLAIMS IT IS TECHNICALLY FEASIBLE TO VIRTUALLY COLLOCATE ADLU LINE CARDS WITHIN ANY NEXT GENERATION DIGITAL LOOP CARRIER SYSTEMS. IS THIS TRUE?

A. No it is not. ASDL Digital Line Unit ("ADLU") cards are vendor-specific and configured for a specific type of DLC system and network configuration. Today, the only vendor that provides a line card for NGDLC is Alcatel.

Q. HOW MUCH ALCATEL LITESPAN DOES QWEST HAVE DEPLOYED IN ARIZONA?

A. Currently, Qwest has deployed Alcatel's Litespan NGDLC to 1.69% of Arizona's total Qwest access lines. To put this into perspective, Qwest has deployed DLC to 27.56% of the total number of Qwest access lines in Arizona.

Q. MR. MORRISON ALSO CLAIMS THE ADLU COULD BE UNBUNDLED AS A STAND-ALONE NETWORK ELEMENT. IS THIS POSSIBLE?

A. No, it is not for several reasons. First, the ADLU does not even function as a stand-alone network element. The ADLU card provides voice/data combination functionality and limited routing capability. It does not function alone to permit service as a standard element. Further, the card will not function without power. Finally, the ADLU line card shares the CPU and transport platform of the DLC system.

Therefore, the ADLU is *not capable* of functioning as a stand-alone network element and should not be unbundled as a separate network element. Nor is the ADLU card a "plug and forget it" network element, as Mr. Morrison claims.

Q. IS THERE A PHYSICAL NETWORK DEMARCATION POINT IN THE ADLU LINE CARD?

A. No. The ADLU line card shares a common backplane with the DLC platform. This means the advanced services traveling through it are commingled with those of Qwest's for transport back to the central office.

Q. WITHOUT A DEMARCATION POINT, HOW WOULD A CLEC "PICK UP" ITS DATA TRAFFIC FROM QWEST?

A. The data is formed into packets at the DLC platform and transported back to an ATM switch. The CLEC would "pick up" packets at the ATM switch.

Q. WOULDN'T THIS AMOUNT TO UNBUNDLED PACKET SWITCHING, RATHER THAN VIRTUAL COLLOCATION AS MR. MORRISON SUGGESTS?

A. Yes, it appears that is what Mr. Morrison is suggesting. Qwest witnesses Kathy Malone and Joseph Craig address both the policy and technical issues of Unbundled Packet Switching.

Q. IS QWEST REQUIRED BY THE FCC TO UNBUNDLE DLC OR DSLAM PLATFORMS?

A. No, it is not. Qwest is required by the FCC to provide unbundled loops from its integrated digital loop carrier systems but not to unbundle the systems themselves. DSLAMs are part of the packet switch network and, as such, are subject to unbundled packet switching rules discussed by Ms. Malone and Mr. Craig. The FCC has not ordered the DSLAM platform itself to be unbundled.

Q. WHAT WOULD HAPPEN TO THE UTILIZATION OF THE DSLAM IF CARD AT A TIME REMOTE COLLOCATION WERE PERMITTED?

A. Qwest uses the Lucent Stinger DSLAM and copper-based transport. The DSLAM has 7 slots; however, one slot is used to provide the necessary transport functions. In the remaining 6 slots, the current configuration allows for 24 customer assignments per slot for a total of 144 customers.

Allowing card at a time remote collocation would essentially be a loss of 24 time slots or end-user terminations. From Qwest's perspective, this equates to the DSLAM being under-utilized by 17%, thus decreasing operating efficiencies. This means that Qwest revenues associated with these 24 terminations essentially disappears.

Therefore, providing card at a time remote collocation introduces additional uncertainty into an already expensive undertaking. The end result could well mean that remote DSLAM deployment would become too expensive for Qwest to provision.

Q. IS QWEST DEPLOYING ADVANCED SERVICES IN PLATFORMS OTHER THAN DLC?

A. Yes, in a Distribution Area ("DA") Hotel arrangement. DA Hotels are stand-alone remote structures located next to Feeder Distribution Interfaces ("FDI"), in which DSLAM equipment is placed.

Q. DOES THE DA HOTEL HAVE SPACE, POWER, HVAC TO ACCOMMODATE REMOTE COLLOCATION?

A. Yes.

Q. PLEASE DEFINE REMOTE COLLOCATION.

A. Remote Collocation is defined as the placement of CLEC equipment necessary to access UNEs within Qwest owned or leased Outside Plant ("OSP") structures. When building OSP structures, Qwest is obligated to consider CLEC demand for UNEs as part of the space requirement analysis. In addition, if Qwest chooses to deploy DSLAMs in a subloop, collocation space for similar CLEC equipment must be accommodated.

Remote Collocation is available at new and existing OSP structures wherever technically feasible. One example of an OSP structure is the Remote Terminal, which provides Qwest and CLECs with common access to space and power. Remote access to subloop network elements (e.g. subloop feeder, subloop distribution) is obtained at the FDI. CLEC requests to remotely collocate at other OSP structures will be considered on a case-by-case basis through the remote collocation process.

Q. PLEASE PROVIDE THE ASSUMPTIONS THAT ARE INVOLVED IN RT COLLOCATION.

The following assumptions form the basis for RT Collocation: Qwest currently offers Remote Collocation at existing sites and new DA Hotel sites. The DA Hotel OSP planning team provides participating CLECs with Qwest's proposed deployment of DSLAM Hotels, by wire center, at a Distribution Area ("DA") level. Following site disclosure, CLECs have 30 days to notify Qwest of their desire to participate in joint planned remote collocation. This will allow Qwest to correctly size the DSLAM Hotel to house equipment, provide for power consumption, and heat dissipation requirements. When CLECs do not participate in a DA Hotel Build, Qwest will add 15% to the size of the DSLAM Hotel and allow for increased terminations at the FDI. Upon completion of the build, the additional space will be offered on a first come, first serve basis (The Ameritech/SBC

merger FCC 00-336, ¶ 34, requires SBC to make available 15% of a new OSP cabinet and 20% of a CEV/HUT to unaffiliated carriers).

When Qwest remotely deploys a DSLAM (at which an additional cabinet has not been installed next to the FDI), a DSLAM Hotel will be placed next to the FDI. CLECs are responsible for installing and maintaining their equipment at remote sites. Additional capacity in the OSP structure for non-forecasted growth will be allocated on a first come, first serve basis.

Q. PLEASE DESCRIBE THE RATE ELEMENTS INVOLVED IN REMOTE COLLOCATION.

A. The following rate elements are associated with Remote Collocation:

Non-Recurring Charges

- Space (per standard mounting unit)

Includes: cost of the cabinet, all work associated with placement of the cabinet, use of common equipment, and heat dissipation.

- FDI Terminations

Includes: initial work to provide the requested DS0 and DS1 terminations at the FDI.

Recurring Charges

- Power (in amps)

Includes: the on-going power consumption at the Remote Collocation site (this will be in five amp increments for DC, and in 120, 208, and 240 amp increments for AC).

- FDI Terminations

Includes: maintenance of the DS0 and DS1 cable between the FDI and the Remote Collocation site, and maintenance of the DS0 and DS1 terminations at the FDI.

SUMMARY OF TESTIMONY

Q. PLEASE SUMMARIZE YOUR TESTIMONY.

A. The Arizona Staff in Docket No. T-00000A-97-0238, Final Report on Qwest's Compliance with Checklist Item No. 1 – Interconnection and Collocation, dated October 12, 2001, states at paragraph 395 of their recommendation:

"Nonetheless, Staff does not recommend that Qwest be required to go beyond current FCC rules. While CLECs would like to virtually collocate at remote terminals utilizing a 'card by card' basis, Staff does not recommend this approach since this is not currently done in the central office or required by the FCC. Staff

believes any determination regarding 'card by card' collocation should come from the FCC."

In addition, the Arizona Staff and the ALJ in Docket No. T-00000A-97-0238, states in their recommended order on Emerging Services dated September 28, 2001 at paragraph 157: "Staff believes that the record is not sufficient to establish whether plug and play is a feasible option for collocation. Staff recommends that because the FCC is currently requesting comments on the feasibility of 'plug and play', this issue should be revisited after the FCC ruled." And, at paragraph 158: "We [ALJ] concur with Staff. We can not determine the feasibility of 'plug and play' at this time. We find that Qwest should file a revised SGAT provision after the FCC has made a final determination."

For these reasons and the other reasons I have described in this testimony, the Commission should reject card at a time collocation. Qwest offers Remote Collocation in which a CLEC is able to collocate its DSLAM equipment within a Qwest Remote Terminal.

Q. DOES THIS COMPLETE YOUR TESTIMONY?

A. Yes it does.

BEFORE THE ARIZONA CORPORATION COMMISSION

WILLIAM A. MUNDELL
CHAIRMAN
JIM IRVIN
COMMISSIONER
MARC SPITZER
COMMISSIONER

IN THE MATTER OF INVESTIGATION INTO QWEST CORPORATION'S COMPLIANCE WITH CERTAIN WHOLESALE PRICING REQUIREMENTS FOR UNBUNDLED NETWORK ELEMENTS AND RESALE DISCOUNTS	)	**DOCKET NO. T-00000A-00-0194** **Phase II A**
STATE OF COLORADO	)	**AFFIDAVIT OF ROBERT J HUBBARD**
COUNTY OF ARAPAHOE	)	

Robert J. Hubbard, of lawful age being first duly sworn, deposes and states:

1. My name is Robert J. Hubbard. I am Director – Technical Regulatory, Local Networks for Qwest Corporation in Littleton, Colorado. I have caused to be filed written surrebuttal testimony and exhibits in support of Qwest Corporation in Docket No. T-00000A-00-0194, Phase II A.

2. I hereby swear and affirm that my answers contained in the attached testimony to the questions therein propounded are true and correct to the best of my knowledge and belief.

Further affiant sayeth not.

Robert J Hubbard

Robert J. Hubbard

SUBSCRIBED AND SWORN to before me this 10 day of October, 2001.

Donna Goldman

Notary Public residing at
Arapahoe, Colorado

My Commission Expires: 4/5/04

DONNA GOLDMAN
STATE OF COLORADO
NOTARY PUBLIC

BEFORE THE ARIZONA CORPORATION COMMISSION

WILLIAM A. MUNDELL
CHAIRMAN
JIM IRVIN
COMMISSIONER
MARC SPITZER
COMMISSIONER

IN THE MATTER OF INVESTIGATION INTO QWEST CORPORATION'S COMPLIANCE WITH CERTAIN WHOLESALE PRICING REQUIREMENTS FOR UNBUNDLED NETWORK ELEMENTS AND RESALE DISCOUNTS.	]]]]]]	**DOCKET NO. T-00000A-00-0194 PHASE II-A**

SURREBUTTAL TESTIMONY OF

ROBERT H. BRIGHAM

ON BEHALF OF

QWEST CORPORATION

OCTOBER 19, 2001

INDEX OF TESTIMONY

I. IDENTIFICATION OF WITNESS

Q. PLEASE STATE YOUR NAME, BUSINESS ADDRESS AND POSITION WITH THE QWEST CORPORATION.

A. My name is Robert H. Brigham. My business address is 1801 California Street, Denver, Colorado. I am employed as a Director - Service Costs in the Qwest Services Corporation Policy and Law department. I am testifying on behalf of Qwest Corporation ("Qwest").

Q. HAVE YOU PREVIOUSLY FILED TESTIMONY IN THIS PROCEEDING?

A. Yes. On August 31, 2001, I filed direct testimony in this proceeding.

Q. ARE YOU ADOPTING TESTIMONY OF OTHER QWEST WITNESSES FROM PHASE II?

A. Yes. I am adopting the testimony of Qwest witnesses Gary Fleming and Teresa Million that was deferred from Phase II to this phase of the docket. In particular, I am adopting page 13, line 8, through page 18, line 15, of Ms. Million's direct testimony and page 54, line 12, through page 57, line 2, of Ms. Million's rebuttal testimony. From Mr. Fleming's rebuttal testimony, I am adopting page 82, line 15, through page 97, line 19.

II. PURPOSE OF TESTIMONY

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?

A. The purpose of my testimony is to respond to the testimony filed by several parties in this proceeding on September 27, 2001. I will respond to the testimony of Mr. William Dunkel filed on behalf of the Commission Staff, the testimony of Mr. Edward Caputo filed on behalf of WorldCom, the testimony of Mr. Sidney Morrison filed on behalf of WorldCom, the testimony of Mr. Timothy Gates filed on behalf of WorldCom, the testimony of Mr. Daniel Kelley filed on behalf of AT&T and WorldCom, and the testimony of Mr. Richard Chandler filed on behalf of AT&T and WorldCom.

III. RESPONSE TO MR. DUNKEL

A. Staff HAI Run

Q. HAS STAFF PERFORMED A RUN OF THE HAI MODEL FOR PURPOSES OF THIS PROCEEDING?

A. Yes. Schedule WD-2 contains a results output from the HAI Model. Mr. Dunkel considers these cost results in some of his pricing recommendations.

Q. DOES MR. DUNKEL'S RUN OF THE HAI MODEL REFLECT THE INPUTS CHOSEN BY THE COMMISSION IN ORDER NO. 60635?

A. According to Mr. Dunkel, his run of the HAI model "used inputs that the ACC had chosen in its Decision No. 60635." When inputs were not addressed in this order, Mr. Dunkel has allegedly "used the inputs as determined by the FCC."[1] Mr. Dunkel notes that in Phase II, he also used the FCC inputs for those items that the ACC had not addressed.

---

[1] Dunkel direct, page 4.

Q. DO YOU KNOW IF MR. DUNKEL HAS PROPERLY INCORPORATED THE FCC'S INPUTS INTO HIS RUN OF THE HAI MODEL?

A. No. Qwest is awaiting an additional discovery response from Staff that should permit me to view Mr. Dunkel's runs and to determine the precise inputs that he used.

However, in Phase II, Dr. William Fitzsimmons, on behalf of Qwest, demonstrated that Mr. Dunkel erred in his attempt to incorporate the inputs described by the FCC in its Tenth Report and Order into the HAI Model, version 5.2a.[2] Please refer to Dr. Fitzsimmons' July 30, 2001 surrebuttal in Phase II of this proceeding, and Qwest's Post Hearing Reply Brief, filed September 21, 2001, for a description of these errors. Dr. Fitzsimmons' surrebuttal testimony, which describes these errors, is attached to this testimony as Exhibit RHB-R1. In sum, the HAI runs previously provided by Mr. Dunkel did not properly reflect FCC inputs. Qwest does not yet know whether Mr. Dunkel has corrected these errors in the HAI run that he has provided with his September 27, 2001 testimony in Phase IIA of this proceeding.

Qwest reserves the right to comment on this issue further upon receipt of a response to the aforementioned data request.

Q. DO YOU AGREE THAT PRICES IN THIS PROCEEDING SHOULD BE BASED ON COSTS THAT REFLECT THE INPUTS ADOPTED BY THE COMMISSION IN

---

[2] *In the Matter of Federal-State Joint Board on Universal Service; Forward-Looking Mechanism for High Cost Support for Non-Rural LECs*, CC Docket Nos. 96-45 & 97-160, FCC 99-304, Tenth Report and Order (rel. Nov. 2, 1999) ("*Inputs Order*").

ORDER NO. 60635, AS WELL AS FCC INPUTS AS USED IN THE FCC SYNTHESIS MODEL ("SM")?

A. The prices the Commission adopts should be based on cost studies that utilize reasonable inputs and that are consistent with TELRIC principles. This is true no matter which cost model the Commission relies upon. The Commission should only use inputs that it ordered previously if it determines that those inputs are still current and appropriate for a TELRIC study performed today and are supported by the evidence presented in this proceeding.

In addition, for purposes of developing TELRIC data, the Commission should not use inputs that the FCC used in its SM unless the inputs withstand scrutiny and are consistent with the evidence in this proceeding. It is important to remember that the SM (also known as the "HCPM") was designed to develop costs for Universal Service purposes—not to develop UNE costs. In its *Inputs Order*, the FCC acknowledged that the SM is *not* intended for use in developing costs for unbundled network elements ("UNEs"), in part because the model uses nationwide inputs rather than state-specific inputs: "The federal cost model was developed for the purpose of determining federal universal service support, and it may not be appropriate to use nationwide values for other purposes, such as determining costs for unbundled network elements."[3] Thus, the FCC itself has recognized that parties should be cautious about utilizing the SM or its inputs for developing UNE costs and prices.

Accordingly, for the purpose of calculating Arizona UNE costs, inputs specific to Arizona generally are preferable to nationwide inputs that the FCC developed for

[3] *Inputs Order at* ¶32.

determining universal funding. The Commission should adopt the inputs used in the Qwest models filed in this case, since these inputs properly reflect TELRIC principles and are specifically appropriate for calculating UNE costs.

B. Overhead Costs

Q. PLEASE SUMMARIZE MR. DUNKEL'S ADVOCACY REGARDING THE TREATMENT OF OVERHEAD COSTS.

A. Mr. Dunkel argues that a 15% overhead factor should be applied to direct costs. According to Mr. Dunkel, based on Commission Decision No. 60635, this factor is supposed to assign "attributed, joint and common overhead costs"[4]

Q. IS IT APPROPRIATE TO APPLY A 15% "OVERHEAD FACTOR" TO DIRECT COSTS IN QWEST'S TELRIC STUDIES?

A. No. First, as I will demonstrate below, it is not at all clear that the Commission intended to utilize the 15% factor in the manner advocated by Mr. Dunkel. Second, the development of alleged "TELRIC" data based on the application of a 15% loading to direct costs would violate the FCC's TELRIC rules.

Q. PLEASE EXPLAIN WHY THE APPLICATION OF THE 15% FACTOR TO DIRECT COSTS DOES NOT APPEAR TO BE CONSISTENT WITH THE COMMISSION'S INTENT IN DECISION NO. 60635.

A. Although Mr. Dunkel implies that the Commission adopted a 15% "overhead factor" that would specifically include all of Qwest's non-direct (i.e., directly

[4] Dunkel direct, page 4.

attributed and common) costs, he fails to recognize the context in which the Commission ordered the use of that factor. Mr. Dunkel has not quoted the Commission in full context or within the overall framework in which the Commission discussed this factor. To gain a true understanding of what this 15% factor represented, how it was determined, and how it was intended to be used, one must refer back to the original cost docket.

Q. WHAT OVERHEAD ASSIGNMENT PROPOSALS WERE PRESENTED BY PARTIES IN THE PREVIOUS COST DOCKET?

A. The Commission's original decision (Decision No. 60635) contains a section that addresses the appropriate overhead expense factor to use in TELRIC cost estimates. The Commission referred to three proposals, sponsored by U S WEST (now Qwest), AT&T, and ACSI. U S WEST requested an overhead factor of 27% as a mark-up over direct TELRIC investment costs and direct expenses. This factor consisted of 22% for directly attributed costs and 5% for common costs, as applied in U S WEST's cost models. AT&T proposed a 10.4% overhead factor for use in the Hatfield model, and that factor related only to the 6700 series of common cost accounts. This 10.4% was described in the Commission's Order as being "based upon a regression analysis of the industry . . . . [which] produced a 13% overhead estimate, which the Hatfield Model reduced by 3% to reflect competitive market efficiencies."[5] Data requests submitted by AT&T showed that this 13% regression amount was based on a LEC average for 1995 ARMIS account 6700 expenses. The U S WEST overhead factor that was included in the regression analysis was 13.6%. ACSI recommended a 15% mark-up over direct costs. This recommendation was not based on a specific cost analysis but, rather,

[5] Decision No. 60635 at 12.

was a revenue mark-up over TSLRIC costs (direct investment costs + direct expenses) for a specific "competitive" service (Centrex) offered by Pacific Bell.

Faced with these three conflicting percentages, which really represented three different "overhead" calculations, the Commission adopted a 15% overhead cost factor. In its order, the Commission described this factor as "including attributed, joint and common costs." However, the factor was intended to be used solely for the Commission's re-run of the Hatfield Model, as a replacement for the 10.4% overhead cost factor. In the HAI model, the common overhead factor of 10.4% only includes the 6700 series of overhead costs—it does not include any costs that are defined as "directly attributable or joint."

Q. WHAT IS THE BASIS FOR YOUR CONCLUSION THAT THE COMMISSION INTENDED THE 15% FACTOR TO BE USED SOLELY AS A REPLACEMENT FOR THE 10.4% COMMON FACTOR WHEN RE-RUNNING THE HATFIELD (NOW HAI) MODEL?

A. In Decision 60635, the Commission specifically stated: "Despite imperfections in the Hatfield Model, it will be the starting point of our analysis from which to determine the cost of unbundled elements."[6] A review of the section dealing with "Corporate Overhead," where the Commission ordered the 15% factor, reveals that the 15% factor was adopted based on the Commission's concern that AT&T's 10.4% factor was insufficient to cover Qwest's overhead expenses. Thus, the Commission was concerned that the 10.4% HAI overhead loading—which, in reality, is only intended to assign the 6700 series of common accounts—was too low, so it replaced this factor with a 15% factor.

[6] Decision No. 60635 at 12-13.

Q. THE COMMISSION INTENDED THE 15% FACTOR TO BE USED IN RE-RUNS OF THE HAI MODEL. WHY CAN'T THIS FACTOR BE USED IN THE QWEST MODELS AND BE APPLIED TO DIRECT COSTS AS PROPOSED BY MR. DUNKEL?

A. While the HAI model and the Qwest TELRIC studies assign directly attributable and common costs to elements, the models do not categorize the expenses in exactly the same manner. For example, the meaning and application of the "overhead" or "common" cost factors differ substantially between the two models. The "overhead" cost factor (the 10.4%) in the HAI model consists only of the 6700 series of Corporate Operations accounts. The costs for other accounts, such as network operations, network support, and general support, are applied elsewhere in the HAI model, using separate factors. In the Qwest cost studies, only a portion of the 6700-series Corporate Operations accounts are considered as common or "overhead" costs. The remaining 6700 accounts (i.e., accounting and finance, human resources, and information management) are considered to be directly attributable, along with network operations, network support, and general support costs.

Thus, it would be incorrect to simply apply the 15% overhead factor to costs in the *Qwest* models. If this factor (which includes the 6700 accounts) were applied to direct expenses, as Mr. Dunkel recommends, then numerous expense accounts would be excluded from the cost results, including network operations, network support, and general support expenses. This approach would clearly be a methodological error, and it would prevent Qwest from recovering legitimate costs that it incurs to provide UNEs.

Conversely, when the *HAI* model is re-run with the 15% overhead factor, the 15% factor assigns account 6700 expenses. The other expenses, such as network operations, network support, and general support expenses, have already been assigned in the HAI model via other factors. Thus, no accounts are excluded.

In sum, The Commission ordered a re-run of the HAI Model using the 15% factor as a replacement for the 10.4% common overhead factor. When that factor is used in the HAI model, no expense accounts are improperly excluded. However, when the same 15% factor is used in Qwest studies and is applied to direct expenses, many expense accounts are excluded. Thus, Mr. Dunkel's methodology systematically excludes costs from Qwest's studies that would be included in the HAI model. This exclusion violates the FCC's rules relating to TELRIC, which require that direct, directly attributable and common costs be included in a TELRIC study.[7]

Q. DOES THE USE OF A 15% OVERHEAD FACTOR, AS APPLIED TO DIRECT COSTS, RESULT IN A SIGNIFICANT UNDERSTATEMENT OF COSTS?

A. Yes. The assignment to direct costs of the costs associated with network operations, network support, general and computer support, uncollectibles, and intangibles comprises a "mark-up" of approximately 18 to 19 percent over direct

[7] Paragraph 682 of the FCC's First Interconnection Order, states "We conclude that, under a TELRIC methodology, incumbent LECs' prices for interconnection and unbundled network elements shall recover the forward-looking costs directly attributable to the specified element, as well as a reasonable allocation of forward-looking common costs. . . Directly attributable forward-looking costs include the incremental costs of facilities and operations that are dedicated to the element. Such costs typically include the investment costs and expenses related to primary plant used to provide that element. Directly attributable forward-looking costs also include the incremental costs of shared facilities and operations. Those costs shall be attributed to specific elements to the greatest extent possible.

costs. The costs associated with accounting and finance, human resources, and information management expenses require an additional "mark-up" of about seven to eight percent over direct costs; and common costs, such as costs relating to executive, planning, external relations, legal, and other general and administrative functions, require a further mark-up of approximately five to six percent over direct costs. All of these costs are necessary to the operations of an efficient telecommunications network; far more is needed to run an efficient network than just direct investment, maintenance, property tax, and marketing costs. It should come as no surprise that a 15% mark-up would not even begin to cover all the necessary support costs.

As noted above, even the HAI model does not assume that 15% is a reasonable "mark-up" factor for all of these costs. Mr. Dunkel's recommended use of the 15% factor would lead to an unreasonable result and would not be consistent with the apparent purpose of that factor when the Commission adopted it in Decision 60635. Accordingly, the Commission should reject Mr. Dunkel's recommended use of this factor in Qwest's cost studies.

C. Remote Terminal Collocation

Q. DOES MR. DUNKEL CLAIM THAT ONE OF THE FILL FACTORS USED IN THE REMOTE TERMINAL COLLOCATION STUDY IS TOO LOW AND SHOULD BE INCREASED?

A. Yes. Mr. Dunkel notes that Qwest uses a 33% fill factor in the Remote Terminal Collocation study. This fill factor is applied to various components of the cabinet

that is used to provide remote collocation. Mr. Dunkel observes that this fill rate is lower than other fill rates that the Commission has established for other equipment components, such as feeder and distribution plant. He recommends that a 61.25% fill, based on feeder and distribution plant fills, be used for the remote terminal collocation equipment components.

Q. IS THIS APPROPRIATE?

A. No. First of all, there is no basis for using loop plant fills for remote terminal collocation equipment. Different types of equipment in the Qwest network have different characteristics, including different utilization rates. It is necessary to estimate fill rates based on the characteristics that are unique to each type of equipment. It is illogical to argue that a weighting of feeder or distribution fill rates will somehow produce a rate appropriate for remote terminal collocation cabinets. Buried distribution and feeder cables have little in common with a remote terminal collocation cabinet, and there is no reason to believe that these distinct types of facilities should have the same fill rates. Mr. Dunkel observes that feeder and distribution cables -- which are substantially similar facilities -- have different fills (71.5% vs.51%). The fact that similar facilities can have significantly different fill rates demonstrates the inappropriateness of assuming that loop plant and collocation cabinets, which are fundamentally different from each other, will have the same fill rates.

Q. IS THE 33% FILL RATE THAT QWEST USES APPROPRIATE?

A. Yes. In fact, the 33% fill is very conservative, when one considers the actual demand for remote terminal collocation. Qwest sets the fill rate for the remote terminal collocation cabinet at 33% because the projections for CLECs utilizing the

DA Hotel sites are very low. Qwest began formally offering remote terminal collocation to the CLECs in February 2001. Since that time, Qwest has deployed hundreds of sites and, to date, only one customer has ordered this product and has requested only two DA Hotel sites. Considering the take rate of this product thus far, as compared to the DA Hotels deployed by Qwest, the fill rate of 33% is conservative and may in fact not result in full recovery of costs by Qwest. If anything, the 33% fill rate for this equipment is overstated. It is revealing that while he proposes a fill rate of 61.25% for this equipment, Mr. Dunkel has acknowledged in a response to a data request that this recommended fill rate is not based on or informed by any experience or data relating to the use of remote collocation cabinets.[8]

Q. MR. DUNKEL ALLEGES THAT QWEST INAPPROPRIATELY USES THE "BUILDING FACTOR" IN THE REMOTE TERMINAL COLLOCATION STUDY. PLEASE COMMENT.

A. The Building Factor is used in only one isolated recurring cost calculation in the Remote Terminal Collocation Study. This factor is used as a loading for certain power equipment that is shared between Qwest and collocators. If this loading factor is removed (i.e., a value of zero is entered as an input to the study), it has a negligible impact on the study result. In fact, the results, when rounded to the penny, do not change. To address Mr. Dunkel's concern, Qwest will remove the building loading calculation from the study.

Q. MR. DUNKEL CALCULATES RECURRING AND NONRECURRING REMOTE TERMINAL COLLOCATION SPACE COSTS THAT ARE APPROXIMATELY

[8] *See* Staff Response to Qwest Data Request 1-006.

HALF OF THE QWEST COSTS. SHOULD THE COMMISSION ACCEPT MR. DUNKEL'S COSTS?

A. No. Mr. Dunkel's costs are based on (1) a 15% overhead factor applied to direct costs and (2) a 61.25% fill factor. As I demonstrated above, these inputs are not appropriate and lead to a significant understatement of costs.

D. Analog Line Port

Q. WHAT IS MR. DUNKEL'S RECOMMENDATION REGARDING THE NONRECURRING RATE FOR THE ANALOG LINE PORT?

A. Mr. Dunkel argues that the nonrecurring Analog Line Port cost as calculated in the Qwest nonrecurring cost study is too high, and the cost as calculated in the AT&T Nonrecurring Cost Model ("NRCM") is too low. He recommends that "the current nonrecurring rate of $42.58 for the analog line port be continued, as is shown on Schedule WD-5."[9]

Q. DO YOU AGREE WITH MR. DUNKEL'S RECOMMENDATION?

A. No. The Qwest nonrecurring cost study is based on an analysis of the activities required to process an order for an analog line port. The activities, work times and probabilities of occurrence are all based on input from Qwest subject matter experts who are involved in the order provisioning process. The nonrecurring rate for the analog line port should be set based on these cost estimates.

Q. WHAT IS THE BASIS FOR THE CURRENT $42.58 RATE?

---

[9] Dunkel direct, page 10.

A. The $42.58 rate was established by the Commission in Decision No. 60635, and it is my understanding that the rate is based on a retail rate, less the NRC avoided cost discount per page 29 of the Order. However, in *U S WEST Communications, Inc. v. Jennings*, the Arizona federal district rejected this pricing approach for UNEs, stating that "[t]he 'retail price less avoided costs' formula applies only when a CLEC purchases finished services for resale."[10] Because the analog line port is not a resale service, as the court's decision establishes, the rate for it should not be based on avoided costs. Accordingly, the current rate is not appropriate, and the Commission should establish a new rate based on the TELRIC data that Qwest has provided.

E. Features

Q. WHAT IS MR. DUNKEL'S RECOMMENDATION REGARDING FEATURE COSTS?

A. Mr. Dunkel recommends that the Commission set the analog line port rate, including features, at $1.61 per month. This is the rate established by the Commission in the previous cost docket. According to Mr. Dunkel, this rate includes a $1.10 analog line port cost from his run of the HAI model, along with $0.51 for features.

Q. DO YOU AGREE WITH MR. DUNKEL'S RECOMMENDATION?

A. No. Mr. Dunkel's recommended rate does not include all of the cost components of features. Mr. Dunkel has developed a $1.10 cost for the analog line port, while Qwest has calculated a cost of $1.28 (without features). Mr. Dunkel adds $0.51 to

[10] 46 F. Supp. 1004, 1013 (D. Ariz. 1999).

the port to account for features, while Qwest adds $0.65 for the cost of features and $0.51 for capital lease software expenditures related to features. While the Qwest and Staff basic port costs are not significantly different, Mr. Dunkel's $1.61 rate will not lead to the recovery of the switching equipment-related feature costs and the associated cost of software, which Qwest calculates to be $1.16.

Q. MR. DUNKEL DEVELOPS A $1.10 LINE PORT COST BASED ON HIS RUN OF THE HAI MODEL. DO YOU AGREE THAT THIS IS A PROPERLY CALCULATED COST?

A. No. As calculated in the Qwest ICM, the basic analog line port cost, without features, is $1.28. As demonstrated in Mr. Fleming's June 27, 2001 rebuttal testimony (See pages 82 through 97), the HAI Model understates switching costs. Therefore, I believe the $1.10 cost calculated by Mr. Dunkel using the HAI Model is understated.

Q. DOES THE HAI ANALOG LINE PORT COST INCLUDE THE COST OF FEATURES?

A. While AT&T claims that the HAI analog line port cost includes the costs of features, Qwest does not agree. As noted in Mr. Fleming's Phase II rebuttal testimony filed on June 27, 2001 (see pages 92-93), the FCC switching algorithm adopted by the HAI model does not include applications software costs associated with features. It is also not at all clear that this model includes features hardware, as explained on page 95 of Mr. Fleming's June 27, 2001 rebuttal testimony. Thus, even if the Commission were to accept the understated HAI analog line port cost, feature costs would need to be added to this amount.

Q. MR. DUNKEL CLAIMS THAT "CENTREX 21" FEATURES COSTS SHOULD NOT BE INCLUDED IN THE PER PORT FEATURES CALCULATION. PLEASE COMMENT.

A. Mr. Dunkel notes that Exhibit RHB-3 of my August 31, 2001 testimony includes costs for "Centrex 21" features, and he argues that these costs should not be included in UNE costs. However, I believe Mr. Dunkel may not understand the nature of these data and how they are used. My August 31, 2001 testimony (pages 17-18) describes the methodology that Qwest uses to calculate feature costs:

> First, the investment for each feature is calculated utilizing the SCM Features module that I described in the previous section of my testimony. Second, the investment for each feature is converted to a cost per month based on the application of cost factors. Third, the per feature costs are converted to an aggregate feature cost per month, per port. To accomplish this, each individual feature cost is multiplied by the quantity for each feature, to derive a total monthly cost for each feature. The costs for all features are then aggregated to produce a total forward-looking cost for the market basket of features. This aggregate cost is then divided by total Arizona lines in service to derive a monthly feature cost per line.

In the third step defined above, Qwest multiplies the per feature cost times the quantity for each feature. These quantities, from the DALPS reports, include both POTS and Centrex quantities for a particular feature. This is necessary in order to calculate the total incremental cost of all features in Arizona. This does not mean that Qwest is developing a cost for the retail Centrex 21 offering or any other Centrex or POTS retail offering. What is offered to CLECs is the feature functionality as part of the analog line port UNE. Thus, the Qwest methodology is appropriate.

Q. DOES MR. DUNKEL RECOMMEND A RATE FOR THE LOCAL SWITCHING USAGE UNE?

A. In Schedule WD-1, Mr. Dunkel lists a $0.00 rate for Local Switching, Minute of Use (9.11.3). Schedule WD-2 shows a $0.00147 per minute switching rate, based on Mr. Dunkel's HAI run, as compared with Qwest's proposed rate of $0.002143. I do not know whether the proposed rate is in error or whether Mr. Dunkel is actually recommending a zero rate for local switching usage. Certainly, there is no basis for a zero local switching usage rate, since Qwest clearly incurs usage-related costs for switching a call at the end office. Both Qwest's models and the HAI Model calculate a switching usage cost. These costs are *not* included in the analog switch port, either in Qwest studies or in the HAI model.

The Commission should adopt the Qwest Local Switching per minute of use rate, which is based on the Qwest Switching Cost Model. As demonstrated in Mr. Fleming's June 27, 2001 testimony, and as discussed later in this testimony, the HAI Model understates switching usage costs.

IV. RESPONSE TO MR. CAPUTO

Q. WHAT ISSUES RAISED BY MR. CAPUTO DO YOU ADDRESS?

A. Mr. Caputo alleges that Qwest has overstated the costs for custom routing due to the inclusion of marketing, sales, directly attributed and common costs in the Custom Routing Cost Study (Study #5611). However, his advocacy violates the FCC's TELRIC methodology—each of these categories of costs are appropriately included in the Custom Routing Cost Study, as well as other TELRIC studies.

Q. MR. CAPUTO CLAIMS THAT IT IS IMPROPER TO INCLUDE MARKETING-RELATED EXPENSES IN CUSTOM ROUTING COSTS. IS HE CORRECT?

A. No. Mr. Caputo argues that Qwest has not performed any marketing functions related to custom routing. However, Qwest's Wholesale Carrier market unit is dedicated to serving the needs of Interexchange Carriers and CLECs in order to provide these customers with wholesale services and UNEs, such as custom routing. This market unit incurs wholesale costs that are characterized and recorded as "Marketing - Product Management" costs under Part 32 accounting rules. Qwest employs product managers who perform functions such as product planning, product development and rate and tariff development for all wholesale offerings. Thus, the wholesale product management function is essential to Qwest's custom routing offering. Without these personnel, Qwest would not have been able to develop this service or to offer it.

Thus, it is entirely appropriate to include product management expenses in a custom routing cost study. It should be noted also that in Qwest's cost studies, product management is assigned via a "product management" factor. Qwest develops separate product management factors for retail and wholesale elements. In the custom routing cost study, Qwest has applied the wholesale "interconnection" product management factor.

Q. MR. CAPUTO CLAIMS THAT IT IS IMPROPER TO INCLUDE SALES EXPENSES IN THE CUSTOM ROUTING COST STUDY. IS HE CORRECT?

A. No. Mr. Caputo argues that it is inappropriate to include "sales expense" costs in the Custom Routing Cost Study because allegedly "Qwest is not performing any

sales activity associated with this function."[11] In reality, Qwest does perform sales functions relating to custom routing, and it incurs necessary expenses relating to those functions. These functions include customer contact work, along with servicing and implementation work. These functions are necessary (and expected by CLECs) in order to support any offering, such as custom routing. I do not believe WorldCom would be satisfied if Qwest refused any customer contact regarding custom routing or any other UNE.

Thus, it is entirely appropriate to include sales expense in the Custom Routing Cost Study. It should be noted also that in Qwest's cost studies, sales expense is assigned via a "sales expense" factor. Qwest develops separate sales expense factors for retail and wholesale elements. In the Custom Routing Cost Study, Qwest has applied the wholesale "interconnection" sales expense factor.

Q. DOES MR. CAPUTO CLAIM THAT IT IS IMPROPER TO INCLUDE CERTAIN DIRECTLY ATTRIBUTABLE COSTS IN THE CUSTOM ROUTING COST STUDY?

A. Yes. He claims that there is no evidence that certain costs (including network operations, network support assets, general support assets, general purpose computers, accounting & finance expense, human resources expense and information management expense) are directly attributable to custom routing. In essence, he argues that since these directly attributable costs are not directly caused by custom routing, they should not be included in the Custom Routing Cost Study.

[11] Caputo rebuttal, page 5.

Q. DO YOU AGREE?

A. No. It is inaccurate to claim that most of these expenses are not "directly related" to the custom routing UNE. In fact, these costs are not directly caused by any particular UNE or service. These costs are considered to be shared across services ("directly attributable") and are spread across all UNEs, interconnection services (such as collocation) and retail services. That is, the same directly attributable factors are applied to all UNEs and services.

The FCC's TELRIC methodology specifically requires that shared costs, such as network operations, be assigned to all UNEs in a TELRIC study. In its First Report and Order, the FCC stated:

> We conclude that, under a TELRIC methodology, incumbent LECs' prices for interconnection and unbundled network elements *shall recover the forward-looking costs directly attributable to the specified element, as well as a reasonable allocation of forward-looking common costs.* . . . . Directly attributable forward-looking costs include the incremental costs of facilities and operations that are dedicated to the element. Such costs typically include the investment costs and expenses related to primary plant used to provide that element. *Directly attributable forward-looking costs also include the incremental costs of shared facilities and operations.* Those costs shall be attributed to specific elements to the greatest extent possible. . . . More broadly, certain shared costs that have conventionally been treated as common costs (or overheads) shall be attributed directly to the individual elements to the greatest extent possible. . . . [12] (emphasis added).

Thus, the TELRIC methodology assigns directly attributable costs such as network operations to all UNEs and interconnection services, including custom routing. This is entirely appropriate. TELRIC is not limited to the assignment of "direct"

---

[12] In the Matter of Implementation of the Local Competition Provisions of the Telecommunications Act of 1996, CC Docket 96-98, First Report and Order, released August 8, 1996, at ¶682.

costs, which are caused by a particular UNE or service. It is entirely appropriate to assign directly attributable costs to custom routing.

Q. DOES MR. CAPUTO ALSO ARGUE THAT COMMON COSTS SHOULD NOT BE INCLUDED IN THE CUSTOM ROUTING COST STUDY?

A. Yes. Mr. Caputo states that "WorldCom objects to the inclusions of these costs without a further explanation of what these costs are and demonstrable evidence of how these costs are Common to Custom Routing."[13]

Q. PLEASE RESPOND TO THIS STATEMENT.

A. I am not sure what Mr. Caputo has in mind when he says that Qwest must provide more evidence as to how Qwest's common costs (e.g., legal, external relations, research and development, etc.) are "common to Custom Routing." To say a cost could be "common to Custom Routing" is an oxymoron. By definition, these costs are common costs of the firm and are not directly associated with any UNE or service. The FCC's TELRIC methodology requires that these costs be assigned in a TELRIC study. As noted by the FCC, TELRIC studies should include "a reasonable allocation of forward-looking common costs." Thus, there is no basis for the exclusion of these costs.

V. RESPONSE TO MR. KELLEY

Q. DO YOU HAVE ANY GENERAL OBSERVATIONS REGARDING MR. KELLEY'S TESTIMONY?

---

[13] Caputo rebuttal, page 6.

A. Yes. Mr. Kelley has attempted to rebut several issues raised in the rebuttal testimony of Mr. Fleming, filed on June 27, 2001. However, Mr. Kelley's testimony is fraught with conceptual errors, and twists economic and TELRIC principles in a way that guarantees that Qwest will not be able to recover its forward-looking switching costs, in violation of the Act. I discuss the flaws in Mr. Kelley's advocacy below.

A. Switching Upgrade Costs

Q. DOES MR. KELLEY ARGUE THAT TELRIC STUDIES SHOULD NOT INCLUDE ANY COSTS FOR SWITCH UPGRADES?

A. Yes. Mr. Kelley argues that "the proper application of TELRIC principles excludes from forward looking switching costs both ongoing upgrade costs and the costs of adding new lines."[14]

Q. DO YOU AGREE?

A. No. Essentially, Mr. Kelley argues that switch upgrades may be a legitimate cost of doing business, but that these costs can't be recovered in TELRIC-based rates. In reaching this conclusion, Mr. Kelley has misapplied the FCC's TELRIC methodology.

Q. HAS THE FCC STATED THAT SWITCH UPGRADE COSTS CANNOT BE INCLUDED IN A TELRIC STUDY?

---

[14] Kelley rebuttal, page 3.

A. No. The FCC did not include upgrade costs in its Synthesis Model ("SM"), as noted by Mr. Kelley. However, this model is used to develop costs for universal service. As I noted in my response to Mr. Dunkel, the FCC specifically stated that the SM was developed for universal service purposes, and does not produce TELRIC data for use in pricing Local Interconnection Service ("LIS") and UNEs.

Q. WHY SHOULD UPGRADE COSTS BE INCLUDED IN A TELRIC STUDY?

A. As noted by Mr. Kelley, switch upgrade costs are a legitimate cost of doing business. The costs of upgrading switches to incorporate the latest switch technology are legitimate and necessary business expenditures. Switch upgrades are triggered by operating system software upgrades, and operating software upgrades frequently require corresponding hardware upgrades, including additions to the existing processing capacity and switch memory. After multiple upgrades, the capacity of the processor is often exhausted, requiring processor replacement. Upgrades to operating software are necessary to meet the requirements of regulatory or legislative mandates, as described in Mr. Fleming's June 27, 2001 rebuttal testimony.[15]

The results of a TELRIC study are used to set prices for LIS and UNEs. Thus, if the costs of switch upgrades are not included in the TELRIC study for switching, Qwest will be unable to recover these legitimately incurred costs, even though it will be incurring upgrade costs on a forward-looking basis. The Act specifically

[15] Some regulatory mandates which have required software upgrades include: (1) the Communications Assistance for Law Enforcement Act requirements that could only be met by upgrading to the 5E14 Generic operating software in its 5ESS switches, (2) number pooling requirements – assigning blocks of telephone numbers to carriers in increments of 1,000 rather than 10,000 in order to conserve telephone numbers, (3) international direct digit dialing expansion to 15 digits, (4) interLATA equal access implementation, and (5) flexible automatic number identification (ANI) implementation to facilitate a 2 digit ANI code identifying payphone owners for carrier compensation purposes.

requires that ILECs be permitted to recover the costs they incur, as measured by TELRIC, to provide UNEs to CLECs. Excluding the costs of switch upgrades from TELRIC rates would violate this requirement, as it would deny Qwest compensation for legitimate costs it incurs to provide a UNE.

Q. WHAT IS MR. KELLEY'S RATIONALE FOR EXCLUDING SWITCH UPGRADE COSTS?

A. Mr. Kelley states that a TELRIC study "does not incorporate technical advances that are not yet available to or widely used by local telephone companies." He concludes that these are "hypothetical costs" that are not deployed today, and that therefore, the costs should not be included in a TELRIC study.

Q. DO YOU AGREE?

A. No. Mr. Kelley's advocacy on this matter represents a misapplication of TELRIC principles. The fact that Qwest will need to spend money on switch upgrades is not hypothetical; it is a reality. These are real forward-looking costs that Qwest will incur. As noted in Mr. Fleming's rebuttal testimony in Phase II, in the four years ending December 2000, Qwest spent over $235 million upgrading its digital switches. This translates to $3.71 per line per year. Again, assuming the average life of a switch is 10 years, Qwest will spend about $37.10 per line to upgrade existing switches over their service life. Qwest will continue to incur these upgrade costs in the future.

A TELRIC study should develop the cost of replacing the network today. However, this does not mean that ongoing costs should be ignored. Essentially, Mr. Kelley is arguing that TELRIC represents a "snapshot" of today's replacement network and

that ongoing costs should not be considered. If this approach were followed, we would determine the cost to replace a switch today. In the future, we would develop another "snapshot" view of costs, identifying only the replacement cost. Neither of these snapshots would include the ongoing cost of switch upgrades, which would be incurred between the two "snapshot" views of cost. Thus, based on Mr. Kelley's approach, Qwest would be systematically denied the ability to ever recover these costs via TELRIC-based prices. Neither the Act nor the FCC's pricing rules support this result.

Q. ARE THERE ADDITIONAL PROBLEMS AND INCONSISTENCIES WITH MR. KELLEY'S APPROACH?

A. Yes. Mr. Kelley argues for a "snapshot" approach, but he admits that investments in the network will be depreciated over time. Thus, he argues that depreciation expense should be considered over time, but upgrade costs should not. However, if one is to perform a "snapshot" view consistent with Mr. Kelley's advocacy, one would have to modify the depreciation methodology used in TELRIC studies. TELRIC studies identify capital costs, including depreciation, cost of money and income tax. The cost of money (return) calculation is based on the declining net investment over time. That is, as an asset is depreciated, its net investment decreases, and cost of money is applied to a decreasing net investment amount each year. Thus, the resulting return cost component declines each year over the life of the asset. However, in a TELRIC study, these costs are levelized, since a TELRIC study assumes that the same cost/rate will be established during the depreciation life of an asset. This approach is necessary to reflect the reality that rates cannot be re-calculated each year. With this approach, there is a levelized

cost/rate, not a cost/rate that is highest in year one and that would decrease over time.

However, in Mr. Kelley's "snapshot" approach, it would be inappropriate to levelize capital costs. If he is going to continue to price based on a "snapshot" in time, he should not levelize capital costs, but should include the higher costs that are incurred in the current year of the asset's depreciation life. That is, the cost of money (return) component of the capital costs should reflect the return on the asset without any depreciation instead of weighting in the lower returns needed in later years. Mr. Kelley's approach attempts to have it both ways.

Q. MR. KELLEY ALLEGES THAT UPGRADES "CAN HAVE THE EFFECT OF EXTENDING THE LIFE OF A SWITCH WELL BEYOND THE 10-YEAR LIFE USED IN THE MODEL."[16] PLEASE COMMENT.

A. Mr. Kelley states that if upgrades are included, the "lives of the switches would have to be lengthened considerably."[17] This statement is incorrect. There is no basis for assuming that the 10-year depreciation life established by the Commission was set based on the assumption that there would be no switch upgrades. The reality is that switch upgrades have been occurring and will continue to occur in the future. The depreciation life of a switch considers this fact.

In reality, if one is to assume, as Mr. Kelley does, that TELRIC should not include upgrade costs, then one could assume that the depreciation life of a switch should be shorter. If no upgrades are to be made, a switch would need to be replaced

16 Kelley rebuttal, page 6.
17 Kelley rebuttal, page 6.

sooner in order to serve customers and to provide adequate service. The problem with Mr. Kelley's approach is he wants to assume no upgrades for cost purposes, but wants to assume that upgrades will occur for purposes of determining depreciation life.

B. Growth Lines and Fill Levels

Q. DOES MR. KELLEY ARGUE THAT TELRIC SHOULD NOT CONSIDER THE COST OF GROWTH LINES?

A. Yes. When Qwest purchases switching equipment, growth lines normally cost more than the initial lines installed with the switch. Mr. Kelley argues that a TELRIC study should ignore the additional cost of lines installed for growth, based on the "snapshot" approach I described earlier. He argues that incorporating the additional cost of growth lines will result in what he calls an "intergenerational cross-subsidy," where today's "customers would be paying for capacity designed to serve tomorrow's customers."[18]

Q. IS THIS A REASONABLE ARGUMENT?

A. No. Once again, Mr. Kelley would like to ignore real forward-looking costs that Qwest will incur in the future after replacing the existing network. The reality is that Qwest has purchased growth lines from vendors in the past and will do it in the future. This approach is the least–cost, long-run method for providing switching elements.

---

[18] Kelley rebuttal, page 7.

Q. COULD QWEST SIMPLY BUY A NEW SWITCH RATHER THAN PURCHASE GROWTH LINES IN AN EXISTING SWITCH?

A. Yes, but it would be highly inefficient. For Qwest to avoid purchasing growth lines from switch vendors, it would have to either (1) purchase new switches on a regular basis to serve growth, or (2) purchase more lines than are needed when purchasing a new switch, so that growth lines would not be needed. Either of these alternatives would result in an unwarranted increase in Qwest's costs of doing business. First, simply replacing switches more often rather than purchasing growth lines would result in greatly increased capital expenditures that would be very inefficient. This approach would also lead to shorter switch depreciation lives, resulting in higher costs. Second, Qwest could purchase more lines with the initial switch purchase to avoid purchasing growth lines later. However, this would increase the initial switch cost and would lead to a very high level of spare capacity, or a low level of fill, for much of a switch's life.

This exposes, once again, a basic contradiction in Mr. Kelley's testimony. On the one hand, he says the cost of growth lines should not be considered; on the other hand, he states that a TELRIC study should assume a 94% fill that does not allow for growth. To meet Mr. Kelley's criteria, Qwest would have to either (1) add initial excess capacity in order to avoid needing to add growth lines, and simultaneously maintain a 94% fill level that does not allow for growth (which obviously can't be done); or (2) replace switches more frequently, while not shortening depreciation lives (which also cannot happen). Again, Mr. Kelley can't have it both ways.

In the long run, the least-cost way to serve customers involves serving some demand with lines purchased subsequent to the purchase of a new switch. It is

not efficient or least-cost to purchase new switches more often, or to maintain artificially high levels of spare capacity, in order to avoid purchasing growth lines. Mr. Kelley would inappropriately deny Qwest the ability to recover the forward-looking costs it will incur to provide growth lines, even though purchasing growth lines is a key component of any logical deployment strategy for least–cost, long-run switching facilities.

Q. DOES CONSIDERING THE COST OF GROWTH LINES RESULT IN AN "INTERGENERATIONAL CROSS-SUBSIDY" WHERE "TODAY'S CUSTOMERS WOULD BE PAYING FOR CAPACITY DESIGNED TO SERVE TOMORROW'S CUSTOMERS," AS CLAIMED BY MR. KELLEY?

A. No. Mr. Kelley's "intergenerational cross-subsidy" is a flawed concept on several levels. Considering the cost of growth lines does not mean that today's customers will pay to serve tomorrow's customers. Essentially, Mr. Kelley argues that all of today's customers will be served with all new replacement switches, and tomorrow's customers will be served with growth lines. In the real world, this is not the case. Qwest's Arizona network includes switches placed at different points in time. Thus, some of the demand from today's customers will be served with lines that are part of the purchase of an initial switch, and some of today's customers will be served with growth lines. This circumstance has existed in the past, exists today, and will exist in the future.

Mr. Kelley would apparently defer the cost of growth lines into the future. However, using his "snapshot" approach, Qwest would have no way to recover these costs in the future either, because a "snapshot" TELRIC study performed in

the future based on Mr. Kelley's approach would also exclude the cost of growth lines.

Mr. Kelley alleges that by including the cost of growth lines, Qwest will "both earn higher margins and raise its current rivals' cost."[19] He argues that a competitive firm would be unable to do this. This makes little sense. In a competitive marketplace, Qwest or any other firm needs to recover its costs. To argue that a competitive firm would intentionally act in a manner that would not allow it to recover its costs is disingenuous. Mr. Kelley would systematically deny Qwest the recovery of costs that it must incur.

Q. EARLIER, YOU DESCRIBED HOW THE "SNAPSHOT" COST APPROACH ADVOCATED BY MR. KELLEY IS INCONSISTENT WITH THE MANNER IN WHICH DEPRECIATION IS HANDLED IN A TELRIC STUDY. DOES THE SAME PROBLEM EXIST WITH THE TREATMENT OF GROWTH LINES?

A. Yes. If the "snapshot" approach is used and the recovery of costs for growth lines is denied, it would not be appropriate to levelize capital costs, as I described earlier. If he is going to advocate pricing based on a "snapshot" in time, Mr. Kelley should not levelize capital costs, but should include the higher costs that are incurred in the current year of the asset's depreciation life.

Q. WHAT LEVEL OF SWITCH FILL DOES MR. KELLEY ADVOCATE?

---

[19] Kelley rebuttal, page 8.

A. As I noted earlier, Mr. Kelley argues that a 94% fill factor should be used to calculate switching costs. Mr. Kelley argues that this is the proper fill rate that "allows efficient current operation."[20]

Q. IS THIS A REASONABLE LEVEL OF FILL?

A. No. Qwest could never maintain anywhere near this level of fill in its switches. Qwest must always maintain at least 5% spare capacity for administrative purposes; a 94% fill rate would not allow any spare capacity for growth and would not account for the modularity of switching equipment. As demonstrated in the SCM User Manual that Qwest provided with the ICM on June 27, 2001, it is necessary to maintain spare capacity in order to provision service in a timely and efficient manner (Please refer to Exhibit RHB-R2, which contains the relevant pages from the SCM User Manual describing growth and modularity spare). Qwest could never install a switch with 94% utilization. First, modular equipment (e.g., a processor) comes in certain capacities, and cannot be installed to comport with a 94% fill. Second, growth equipment (e.g., line cards) cannot be installed in very small increments without incurring very high costs. It would make no economic sense to keep the switch at 94% fill, which would require Qwest to essentially add one line at a time when demand occurs. This would cause extremely high engineering and installation costs, and a held order would be required for every line. It is much more cost effective in the long run to add more capacity at a given time to serve growth than to add equipment in small increments. A 94% fill rate is simply not realistic for an efficient carrier.

---

[20] Kelley rebuttal, page 9.

Q. MR. KELLEY ARGUES THAT THE FCC USED A 94% FILL RATE IN THE SM. DOESN'T THIS MEAN THAT A 94% FILL IS APPROPRIATE IN A TELRIC STUDY?

A. No. As I noted earlier, the SM was developed for universal service purposes and does not develop TELRIC data. The FCC does not require the use of this fill in a TELRIC study. In fact, the use of a 94% fill factor would be in direct violation of the FCC's TELRIC rules. In its First Interconnection Order, the FCC stated:

> Per-unit costs shall be derived from total costs using reasonably accurate "fill factors" (estimates of the proportion of a facility that will be "filled" with network usage); that is, the per-unit costs associated with a particular element must be derived by dividing the total cost associated with the element by a *reasonable projection of the actual total usage of the element.*[21] (emphasis added)

A 94% fill factor certainly does not reflect a "reasonable projection of the actual total usage of the element." The unreasonableness of this projected level of usage is demonstrated by Mr. Kelley's inability to identify in discovery any telephone company that operates its switches at this level of fill.[22]

Q. IS A 94% FILL INCONSISTENT WITH OTHER ASPECTS OF MR. KELLEY'S ADVOCACY?

A. Yes. As I mentioned earlier, it is contradictory to argue that a TELRIC study should assume a 94% fill, while at the same time arguing that the study should not consider the cost of growth lines. If a switch were installed at a 94% fill rate, there would be an almost immediate need for growth lines. The only way to avoid this

---

21 First Interconnection Order, ¶ 682.

22 *See* AT&T Response to Qwest Data Request No. 3.

almost immediate need for growth lines is to install some excess capacity initially, which, in turn, has the unavoidable effect of reducing the fill level.

Q. MR. KELLEY ARGUES THAT "IF CAPACITY IS FOR FUTURE USE, THEN IT IS ENTIRELY APPROPRIATE FOR QWEST TO BUILD IT INTO ITS NETWORK. WHAT IS NOT APPROPRIATE IS TO CHARGE TODAY'S CUSTOMERS FOR TOMORROW'S USAGE."[23] DO YOU AGREE?

A. No. As noted earlier in the discussion of growth lines, the "intergenerational cross-subsidy" argument is flawed, and Mr. Kelley's "snapshot" approach would not allow Qwest ever to recover the costs of spare capacity—costs that Qwest must incur.

C. Other Issues

Q. ARE THE COSTS OF APPLICATIONS SOFTWARE THAT QWEST INCURS INCLUDED IN THE HAI SWITCHING COSTS?

A. No. As explained in Mr. Fleming's Phase II rebuttal testimony, the HAI model's switching algorithm does not account for the applications software costs that Qwest incurs. Qwest expensed these software expenses prior to 1992 and then began treating them as a capital lease after 1992. However, other RBOCs continued to expense these software costs. Thus, the FCC data that are used in the HAI model cannot and do not include Qwest's applications software costs. In a response to a discovery request from Qwest, Mr. Kelley acknowledged that the FCC data include the costs of applications software "[t]o the extent 'applications

[23] Kelley rebuttal, page 10.

software' is required to support these services *and is capitalized . . . .*"[24] Because Qwest has not capitalized these expenses since 1992, by Mr. Kelley's own acknowledgement, they cannot be included in the FCC's switching cost data. Thus, Mr. Kelley's statement that "application software that was purchased with a new switch would have already been included in the FCC depreciation data and is included"[25] is incorrect in Qwest's case. Despite Mr. Kelley's claim, the HAI model does not appear to include any applications software costs.

Q. IN HIS PHASE II REBUTTAL TESTIMONY, DID MR. FLEMING DEMONSTRATE THAT THE HAI 5.2A TOTAL SWITCHING INVESTMENT WAS SIGNIFICANTLY LOWER THAN THE EMBEDDED INVESTMENT?

A. Yes. In his rebuttal testimony, Mr. Fleming compared the total switching investment in the HAI Model with the total embedded switching investment. He found that the HAI 5.2a switching investment was approximately 30% of the embedded switching investment. While embedded investment should not necessarily be equal to forward-looking investment, a forward-looking investment amount that is less than 30% of the booked investment "raises a red flag" that something is wrong with the HAI Model switching calculation.

Q. DOES MR. KELLEY ATTEMPT TO EXPLAIN THE GAP BETWEEN FORWARD-LOOKING AND EMBEDDED SWITCHING COSTS?

A. Yes. First, he states, without any evidence, that the embedded fill factors are inefficiently low. He seems to believe that the digital fill factor in Qwest's model somehow represents an embedded fill, which it does not. I am not aware of any

---

24 *See* AT&T Response to Qwest Data Request No. 4.
25 Kelley rebuttal, page 11.

calculation of fill that applies to the embedded plant that is on the books. This investment is not considered in TELRIC studies. Second, he suggests, without evidence, that Qwest may be operating too many switches. This makes little sense, especially given that the FCC's TELRIC methodology requires studies to consider the existing locations of switches. Third, he suggests that switching capacity may have been retired but not yet removed from the books. Again, he provides no evidence of this. Fourth, he alleges that Qwest may have added excess capacity to serve Centrex customers. There is absolutely no basis for this claim. In sum, each of these statements represents little more than unsupported conjecture.

Mr. Kelley may be correct that, in general, digital switching equipment costs have decreased over time. However, even if the data presented on page 13 of Mr. Kelley's testimony are accurate, these decreases come nowhere close to explaining the large gap between the HAI model's switching investment and Qwest's embedded switching investment. For example, the estimate of a 12 percent decrease in switching costs between 1996 and 2000 that Mr. Kelley cites, even if accurate, is really only a decrease of less than 3% per year. An annual decrease of 3% does not do not explain why the HAI switching investment is less than 30% of the embedded investment.

The reality is that this large discrepancy is likely symptomatic of the HAI Model's substantial understatement of switching costs.

VI. RESPONSE TO MR. CHANDLER

A. Switching

Q. DOES MR. CHANDLER ADDRESS THE "ANALOG LINE CIRCUIT OFFSET FOR DLC LINES" INPUT TO THE HAI MODEL?

A. Yes. He states that the HAI Model "makes an adjustment to the end office switching investments in order to capture the switch investment reduction that results from the deployment of integrated digital loop carrier systems."[26] The offset amount is $30 per line.

Q. IS THIS INPUT CONSISTENT WITH THE HAI INPUTS PORTFOLIO DOCUMENTATION?

A. No. As noted by Mr. Fleming in his Phase II rebuttal, the HAI Model Inputs Portfolio ("HIP") states that the HAI Model uses the FCC's switching inputs. However, the FCC utilized a zero value for this input, rather than $30. In his rebuttal, Mr. Chandler admits that the HIP states that FCC inputs are used in the HAI, and that the FCC value for this input is zero, but he nonetheless argues that the $30 should be used as an input.

Q. DID THE FCC CONSIDER THIS ADJUSTMENT IN DEVELOPING ITS SWITCHING COST ALGORITHM?

A. Yes. The FCC specifically rejected this adjustment on the basis that their algorithm already reflected the use of integrated digital circuits, leaving no room for

---

[26] Chandler rebuttal, page 5.

additional adjustments.[27] The ACC should also reject Mr. Chandler's $30 adjustment.

Q. HAS THE HAI MODEL CONSISTENTLY APPLIED THIS DLC INVESTMENT OFFSET?

A. No. In Arizona the HAI Model included the offset. However, in Colorado, AT&T removed the offset. More recently, in Nebraska, the adjustment was back again. All these cases have been filed in the last year and are currently before the respective Commissions. It appears the HAI modelers are unsure as to whether they want to conform to the FCC inputs order. In this proceeding, they decided not to conform. Apparently, when the FCC inputs do not produce the desired result, AT&T enters another input.

Q. IS THERE ANOTHER HAI MODEL INPUT THAT AT&T APPEARS TO BE CHANGING FROM STATE TO STATE?

A. Yes. In the filing in this case, AT&T assumes that 30% of the total switching investment is assigned to the switch port. Recently, the HAI model, as filed in Colorado and Nebraska, was adjusted to assign 60% of the total switching investment to the calculation of the switch port cost. This has a significant and direct impact on minute of use and port costs for switching. The HAI documentation for this traffic sensitive factor as filed in Arizona states: "This factor is an HAI estimate of the average over several different switching technologies." In more recent documentation filed in Nebraska, the support for the new factor states: "This factor is an estimate of the average over several different switching technologies." For AT&T, the same vague documentation can be used to support

[27] *Inputs Order at* ¶ 327.

dramatic changes in input values. For years, the HAI model has supported a 30% non-traffic sensitive assignment of switching costs. However, in other states, the changing of this one number in the study increased the non-traffic sensitive assignment by more than two times without requiring any wording changes in the model's ambiguous documentation.

Q. ARE THERE ANY FINAL PROBLEMS THAT YOU HAVE IDENTIFIED WITH THE HAI MODEL SWITCHING COST ANALYSIS?

A. Yes. The HAI Model completely ignores the cost of billing for switch usage. Collecting the calling volumes, compiling the bills and documenting the charges all cause Qwest to incur costs. These costs are ignored by the HAI model or are assigned for recovery from other products and services that do not require actual usage billing data. Regulators have historically recognized the legitimacy of including the cost of billing usage sensitive rate elements in the cost of providing those elements. The HAI model ignores these legitimate costs or tries to assign them to product services and elements that do not require these billing procedures.

Q. MR. CHANDLER ALLEGES THAT THE DISCOUNT FOR THE PURCHASE OF A NEW SWITCH IS THE SAME AS THE DISCOUNT FOR A GROWTH ADDITION. DO YOU AGREE?

A. No. Mr. Chandler has viewed the SCM data for one of the switch types on the SCM (Switch type 3) and has concluded that the new and growth discounts are the same. However, this is only true for the system discount for this switch type. The data file Osw301a1.mdb contains more than one discount. He failed to note that there is an additional discount under "Integrated Business Plan Discount for Getting Started Equip" that is applied to the purchase of a new switch. Thus, for

Switch type 3, the discount for a new switch purchase is greater than the discount for a growth purchase.

Q. DOES MR. CHANDLER CRITICIZE THE ANALYSIS OF TANDEM SWITCHING TRUNKS PROVIDED IN MR. FLEMING'S PHASE II REBUTTAL TESTIMONY?

A. Yes. In Exhibit RC-1, he provides a "corrected" analysis that purports to show that the number of tandem trunks in the HAI Model is reasonable.

Q. DO YOU AGREE WITH HIS ANALYSIS?

A. No. While I have not been able to totally evaluate this "corrected" analysis, I have identified at least two errors. First, Mr. Chandler assumes that for Switched Access Service there need be only one trunk port in the tandem switch cost. The relevant service in this proceeding is LIS, for which there should be two trunk ports included in the costs of the tandem switch, (both ports are used when a call traverses the local tandem). There is no reason to exclude one of these ports, as Mr. Chandler has done. Second, Mr. Chandler assumes a 2% "tandem fraction of local" percentage. In Arizona, this percentage is over 7%. If these two errors alone are corrected, then the HAI model does not include sufficient trunks.

Q. ARE THERE ADDITIONAL PROBLEMS WITH THE HAI TANDEM SWITCHING CALCULATION?

A. Yes. While the HAI Model systematically understates switching costs, there are two specific problems that may account for some of this understatement. First, the HAI Model assumes too high of a Busy Hour (BH) CCS (Centi-Call Second) per

trunk, which leads to an understatement of the number of trunks needed.[28] Second, Qwest's analysis of the HAI switching costs indicates that the study assumes a 100% trunk fill, which is not realistic and would lead to an understatement of costs.

Q. MR. CHANDLER ARGUES THAT THE SCM IS AN "INSCRUTABLE" MODEL. DO YOU AGREE?

A. No, the model is not "inscrutable." Calculating switching costs is complex, and the SCM is properly designed to carry out this complex exercise. Mr. Chandler improperly equates complexity with inscrutability. The switching module of the HAI model is at least equally complex.

B. Packet Switching

Q. MR. CHANDLER STATES THAT THE QWEST UNBUNDLED PACKET SWITCHING ("UPS") COST STUDY IS NOT FORWARD-LOOKING. DO YOU AGREE?

A. No. The Qwest UPS study reflects the cost of the forward-looking technology that Qwest will use to provide UPS. Qwest will provide UPS when certain conditions are met, as required by the FCC. These conditions are described in the August 31 testimony of Ms. Malone. Mr. Chandler appears to want Qwest to use a different technology to offer a different service without regard to the FCC's packet switching

[28] The HAI Model appears to use a High Use trunk-engineering table to compute the number of trunks needed for all types of trunk groups. In fact, the number of trunk circuits required to handle a given load is significantly lower for a High Use trunk group than it is for a Final trunk group. Tandem switches generally terminate Final trunk groups.

requirements, which are quite specific. Qwest is not required to offer Mr. Chandler's version of packet switching, and as described by Mr. Craig, is not required to adopt Mr. Chandler's preferred choice of technology.

The Qwest UPS TELRIC study appropriately considers the forward-looking technology that will be deployed by Qwest. Please refer to the June 27, 2001 testimony of Ms. Million, pages 54-57 for further discussion.

VII. RESPONSE TO MR. GATES

Q. WHAT IS THE GENERAL THRUST OF MR. GATES' TESTIMONY.

A. Mr. Gates addresses the costs for two elements: Daily Usage Record File and Category 11 Mechanized Record Charge. He proposes that the Commission set a zero rate for these elements. If the Commission determines that a rate is appropriate, he proposes rates that are a fraction of Qwest's proposed rates.

Q. ARE THESE ELEMENTS APPROPRIATELY ADDRESSED IN THIS PHASE OF THIS DOCKET?

A. No. Costing and pricing issues regarding these elements were not deferred to Phase IIA of this docket. In fact, none of the testimony that was previously filed regarding these elements was defined as a "portion of testimony to be considered in later part of phase II" in the Commission's August 3, 2001 procedural order. As the Commission is aware, Qwest has filed a motion to strike Mr. Gates's testimony on this basis. Nonetheless, as Qwest awaits the Commission's ruling, I will address several issues in Mr. Gates' testimony.

Q. DOES MR. GATES CLAIM THAT QWEST'S DAILY USAGE RECORD FILE ("DUF") STUDY IS "FLAWED AND IN CERTAIN INSTANCES UNSUPPORTED"?

A. Yes. However, his criticisms are generally unfounded. Mr. Gates argues that the calculations cannot be followed, and that the supporting data, such as the Expense Factors Module, were not provided with the CD that Qwest filed in Phase II.

Q. DO YOU AGREE?

A. No. I believe Mr. Gates has taken a relatively simple TELRIC study and made it seem complicated. All of the calculations in the study can be observed in the Excel workbook provided in Study #5211, filed on June 27, 2001. In addition, certain supporting data that Mr. Gates could not find, such as the Expense Factors Module, was in fact filed with the June 27, 2001 filing in Phase II.

Q. CAN YOU BRIEFLY DESCRIBE HOW THE CALCULATIONS FLOW THROUGH THE STUDY?

A. Yes. The key input data to the study is contained in the "dvlp calc," "toll data entry" and "eo measurement" worksheets within the Excel workbook. These contain the three cost elements: (1) MCR development, (2) toll data entry and (3) end office measurement.

Q. PLEASE DESCRIBE THE MCR DEVELOPMENT COSTS.

A. The "dvlp calc" worksheet calculates the costs of Mechanized Change Record (MCR) development. These are the costs incurred by Qwest to set up the CLEC to receive customer usage records. The development hours are multiplied by the labor rate to yield the total development costs, which are then spread over a two-

year forecast of demand. The resulting "cost per message" is shown in cell C32 of the worksheet.

Q. DOES MR. GATES PROPOSE THAT COSTS SUCH AS THIS BE RECOVERED ON A NONRECURRING BASIS?

A. Yes. He states that he would "advocate that this type of charge should be developed and applied on a one-time, nonrecurring basis."[29]

Q. COULD QWEST SEEK TO RECOVER THESE DEVELOPMENT COSTS VIA A NONRECURRING CHARGE?

A. Qwest could do this, but I would imagine CLECs would protest if Qwest sought to establish a nonrecurring rate element. I am surprised that Mr. Gates recommends a nonrecurring charge, when AT&T and WorldCom have often argued that nonrecurring charges are a barrier to entry and have generally supported the recovery of costs via recurring charges. It makes sense to recover a one-time development cost over time via a recurring charge.[30]

Q. ONCE THE DEVELOPMENT COST PER MESSAGE IS CALCULATED, HOW DOES IT FLOW THROUGH THE STUDY?

A. The cost per message is entered into the "WINPC Investments" worksheet (Cell C5). The cost is then input into Cell BE21 of the "WINPC Output" worksheet, where it is added to the "toll data entry" amount in Cell BE25. Annual cost factors are applied to this value in the "WINPC Output" worksheet to derive the final result

---

29 Gates rebuttal, page 23.

30 It is important to understand that a one-time development cost is quite different from a nonrecurring cost. A nonrecurring cost is generally related to a customer placing an order for service, and is incurred each time an order is placed. A one-time development cost is only incurred once to set up the service.

(Cell FD25). The application of factors is also displayed in the "Total Product Costs" worksheet.

Q. YOU MENTIONED THAT ANNUAL COST FACTORS ARE APPLIED TO THE COST. ARE THESE FACTORS DISPLAYED IN THE STUDY?

A. Yes. These factors are shown in the "Total Product Costs" worksheet, and also in the "WINPC Output" worksheet. These factors are derived from the "WINPC ACF Outputs" worksheet. This sheet shows all of the cost factors that are used in the study.

Q. WHERE DO THE COST FACTORS COME FROM?

A. The annual expense factors are developed in the ICM Expense Factors Module.[31]

Q. DID QWEST PROVIDE THE ICM EXPENSE FACTORS MODULE ON CD IN THIS PROCEEDING?

A. Yes. The ICM was filed with the Commission on June 27, 2001, as Exhibit TKM-02R (Study 5206). The Expense Factor Base Module is included in the ICM, as noted in the ICM documentation. To access this module, go to the ICM Home Screen. From the home screen, select the "factors" input category from the "select model input category" and push the "go to model inputs" button. Select "View Expense Factor Base Module" from the "view" menu. This will open the Expense Factors Module of ICM, where all expense factor calculations can be observed. In fact, if the user pushes the "summary" button, the expense factors will be displayed. These are the same expense factors that are included in the "WINPC ACF Outputs" worksheet in the Daily Usage Record File study. All of the factor

[31] Capital cost factors are developed in the ICM Capcost Module.

calculations can be followed in the Expense Factors Module, which is essentially an Excel workbook.

Thus, Mr. Gates' claim that the Cost Factors Module was not included in the CD-ROM provided on June 27, 2001, is not accurate. The supporting data and calculations were provided and can be analyzed by Mr. Gates.

Q. PLEASE DESCRIBE THE TOLL DATA ENTRY COSTS.

A. These costs, which are quite small, are incurred for assembly and editing. These toll data entry expenses are processed through the cost study in the same manner as I described for MCR development. The small investment portion follows the same process, with the additional application of capital cost factors.

Q. PLEASE DESCRIBE THE END OFFICE MEASUREMENT COSTS.

A. These are the costs incurred to measure traffic at the central office. However, Qwest has determined that these costs are also recovered in the unbundled switching usage UNE. Therefore, Qwest will agree to remove these costs from the Daily Usage Record File cost study. This reduces the cost to $0.000694 per record.

Q. DOES MR. GATES QUESTION THE APPLICATION OF DIRECT AND DIRECTLY ATTRIBUTABLE FACTORS IN THE DAILY USAGE RECORD FILE STUDY?

A. Yes. His testimony is similar in this area to the testimony of Mr. Caputo. In my response to Mr. Caputo, I demonstrated that these factors are appropriately applied in all TELRIC studies, so I will not repeat that testimony here.

Q. DOES QWEST "ERRONEOUSLY COMPOUND" THESE FACTORS AS ALLEGED BY MR. GATES?

A. No. While each level of factors is applied to the previous level of factors (e.g., the directly attributed factors are applied to direct expense, and the common factors are applied to TELRIC), this does not result in an inflation of the cost results, since the denominators of the factors are adjusted to account for this cumulative effect.

Q. MR. GATES IS CONCERNED THAT INVESTMENT IN LAND AND BUILDINGS IS INCLUDED IN THE COST STUDY. PLEASE COMMENT.

A. With the removal of end office measurement, there is no land and building investment included in the study.

Q. MR. GATES HAS CALCULATED THE DUF RATE TO BE $0.000038. IS THIS REASONABLE?

A. No. This rate would not allow Qwest to cover its forward-looking costs. In fact, based on Mr. Gates' exhibit, the $0.000038 rate appears to be based on a cost that includes only the investment-based costs of measurement. The MCR change and toll data entry costs appear to be excluded. In addition, Mr. Gates has inappropriately set all directly assigned and directly attributable factors to zero. In sum, Mr. Gates has produced a cost that is grossly understated.

VIII. RESPONSE TO MR. MORRISON

Q. DOES MR. MORRISON ARGUE THAT REMOTE TERMINAL COLLOCATION EQUIPMENT COSTS SHOULD BE RECOVERED VIA RECURRING CHARGES?

A. Yes. Mr. Morrison argues that remote terminal collocation costs should be recovered via a recurring charge, rather than a nonrecurring charge. This is similar to the arguments made by Mr. Lathrop in Phase II of this proceeding.

Q. DO YOU AGREE?

A. No. The cost of collocation equipment that is dedicated to CLECs should be recovered via a nonrecurring charge. This issue was debated at length in Phase II of this proceeding, and the rebuttal testimony of Mr. Garrett Fleming (pages 39-48) explained why collocation equipment that is dedicated to CLECs should be recovered via a nonrecurring charge.

Q. IS THE TREATMENT OF RECURRING AND NONRECURRING COSTS IN THE REMOTE TERMINAL COLLOCATION STUDY CONSISTENT WITH THE FCC'S COLLOCATION PRINCIPLES?

A. Yes. In its Second Report and Order in CC Docket No. 93-162, regarding pricing for collocation, the FCC set out principles for determining whether a cost should be recovered through a nonrecurring charge. In Paragraph 32 of that order the FCC states:

> While carriers typically recover investment costs through recurring charges, we find that it is not unreasonable for LECs to assess nonrecurring charges to recover the cost of equipment. Inasmuch as physical collocation is a new service, LECs may have difficulty projecting either the length of time that equipment will be used by an interconnector or the useful life of that equipment for depreciation purposes. When a LEC imposes a recurring charge to recover the depreciation of an asset over time, overestimating the life of the equipment or the length of time that an interconnector would use the equipment could prevent the LEC from recovering the total cost of its investment. We will not, however, permit LECs to recover initially an amount greater than the total installed cost of the equipment, plus a reasonable overhead loading.

The FCC went on to say in paragraph 33:

> We do not agree with ALTS' position that nonrecurring charges developed in conformance with these requirements constitute a barrier to entry. To the extent that the equipment needed for expanded interconnection service is dedicated to a particular interconnector, we believe that requiring that interconnector to pay the full cost of the equipment up front is reasonable because LECs should not be forced to underwrite the risk of investing in equipment dedicated to the interconnectors use, regardless of whether the equipment is reusable....

It is clear from these ordering paragraphs that the FCC recognizes that LECs should not be held accountable for underwriting all the risk of building an interconnector's network. The FCC established the costing principle that the cost of facilities constructed solely for the provisioning of collocation (i.e. dedicated to collocation) can be recovered through nonrecurring up-front charges. In fact, the order goes so far as to imply that anything else would result in an unreasonable transfer of the risk of constructing a CLEC network to the ILEC that is providing collocation. The Act was designed to give competitors access to critical network elements that are currently owned by the ILECs. This access to elements was considered critical to meeting the competitive objectives of the Act. Nowhere in the Act did Congress decide that it was also the ILEC's responsibility to finance a co-provider's entry into the market.

Q. MR. MORRISON COMPARES REMOTE TERMINAL COLLOCATION EQUIPMENT WITH SWITCH PORTS OR LOOPS. IS THIS A VALID COMPARISON?

A. No. The equipment used to provide the Unbundled Switching Port and Unbundled Loop UNEs may be reused by Qwest to provide service to other CLECs or its retail

customers. Remote Terminal Collocation equipment that is recovered via a nonrecurring charge is dedicated to CLECs and will not be reused by Qwest. When equipment is dedicated to CLECs, the costs must be recovered up front, consistent with the FCC policy quoted above.

In addition, as noted on page 46 of Mr. Fleming's June 27, 2001 Phase II testimony:

> However, the FCC does not require states to use nonrecurring charges as the basis for recovering nonrecurring costs. Instead the FCC, in its first Report and Order on interconnection, opined that states may spread the recovery of nonrecurring costs over a "reasonable period of time" if it can be assured that "any such reasonable arrangement would ensure that incumbent LECs are fully compensated for their nonrecurring costs." (Para 749) (emphasis added). In order to "ensure" Qwest recovers its costs, there must be some evidence that there is no risk to Qwest in deferring this cost recovery. The evidence indicates the risks to Qwest of deferring this recovery of these costs are both real and probable. Mr. Lathrop premises his whole recurring charge argument on a reuse assumption that he never defends nor substantiates. There is simply no basis for assuming that recurring collocation rates proposed by Mr. Lathrop will "ensure" that Qwest would be "fully compensated" for the costs it incurs in providing collocation.

Mr. Morrison's testimony is telling. He objects to a nonrecurring charge because "[i]f after paying this charge the competitor should somehow lose the customer, the competitor is stuck with RT collocation space that it may no longer need, yet the competitor has paid a huge up-front charge that it cannot recoup."[32] Mr. Morrison would rather that Qwest put up the money up front, so Qwest will be left "holding the bag" for the remaining recovery if the CLEC loses the customer. This is an inappropriate transfer of risk to Qwest and is exactly the situation that the FCC says is inappropriate in the quotes offered above.

[32] Morrison rebuttal, page 13.

Q. MR. MORRISON ARGUES THAT THE APPLICATION OF FACTORS IN THE REMOTE TERMINAL COLLOCATION STUDY IS INAPPROPRIATE, AND THAT THE UTILIZATION OR FILL LEVEL IS TOO LOW. WILL YOU ADDRESS THESE CONCERNS?

A. I have addressed these issues earlier in my testimony, in my responses to Mr. Dunkel and Mr. Caputo. Therefore, I will not repeat those arguments here.

***Q.* DOES THIS CONCLUDE YOUR TESTIMONY?**

A. Yes, it does.

BEFORE THE ARIZONA CORPORATION COMMISSION

WILLIAM A. MUNDELL
CHAIRMAN
JIM IRVIN
COMMISSIONER
MARC SPITZER
COMMISSIONER

IN THE MATTER OF INVESTIGATION INTO QWEST CORPORATION'S COMPLIANCE WITH CERTAIN WHOLESALE PRICING REQUIREMENTS FOR UNBUNDLED NETWORK ELEMENTS AND RESALE DISCOUNTS	)	**DOCKET NO. T-00000A-00-0194** **Phase II A** **AFFIDAVIT OF ROBERT H. BRIGHAM**
STATE OF COLORADO	)	
COUNTY OF DENVER	)	

Robert H. Brigham, of lawful age being first duly sworn, deposes and states:

1. My name is Robert H. Brigham. I am Director – Service Costs in the Policy and Law department of Qwest Services Corporation in Denver, Colorado. I have caused to be filed written surrebuttal testimony and exhibits in support of Qwest Corporation in Docket No. T-00000A-00-0194, Phase II A.

2. I hereby swear and affirm that my answers contained in the attached testimony to the questions therein propounded are true and correct to the best of my knowledge and belief.

Further affiant sayeth not.

Robert H. Brigham

SUBSCRIBED AND SWORN to before me this 8th day of October, 2001.

Notary Public residing at 2730 W. Wesley Ave #2
Denver, Colorado 80219

My Commission Expires: March 6, 2005

BEFORE THE ARIZONA CORPORATION COMMISSION

WILLIAM A. MUNDELL
CHAIRMAN
JIM IRVIN
COMMISSIONER
MARC SPITZER
COMMISSIONER

IN THE MATTER OF INVESTIGATION INTO QWEST CORPORATION'S COMPLIANCE WITH CERTAIN WHOLESALE PRICING REQUIREMENTS FOR UNBUNDLED NETWORK ELEMENTS AND RESALE DISCOUNTS	) DOCKET NO. T-00000A-00-0194) PHASE II-A)))

EXHIBITS OF

ROBERT H. BRIGHAM

ON BEHALF OF QWEST CORPORATION

OCTOBER 19, 2001

BEFORE THE ARIZONA CORPORATION COMMISSION

WILLIAM A. MUNDELL
Chairman
JAMES M. IRVIN
Commissioner
MARC SPITZER
Commissioner

IN THE MATTER OF INVESTIGATION INTO QWEST CORPORATION'S COMPLIANCE WITH CERTAIN WHOLESALE PRICING REQUIREMENTS FOR UNBUNDLED NETWORK ELEMENTS AND RESALE DISCOUNTS	)	**DOCKET NO. T-00000A-00-0194** **PHASE II**

SURREBUTTAL TESTIMONY OF

WILLIAM L. FITZSIMMONS

ON BEHALF OF QWEST CORPORATION

JULY 30, 2001

Q. PLEASE STATE YOUR NAME AND POSITION.

A. My name is William L. Fitzsimmons. I am a Director at LECG, LLC; my business address is 2000 Powell Street, Suite 600, Emeryville, CA 94608.

Q. ARE YOU THE SAME WILLIAM L. FITZSIMMONS WHO FILED DIRECT AND REBUTTAL TESTIMONY IN THIS DOCKET?

A. Yes.

Q. WHY ARE YOU FILING SURREBUTTAL TESTIMONY AT THIS TIME?

A. On page 62 of my rebuttal testimony, I explained that many of the input values used by Mr. Dunkel in his run of HAI 5.2a are not based on the Arizona Corporation Commission values, the FCC's Tenth Report and Order, or the HAI 5.2a default values. In Exhibit WLF-3 attached to my rebuttal testimony, I identified the distribution and feeder input values from Mr. Dunkel's run of the model that are not supported by the FCC. During the first week of the proceedings in this case, Mr. Dunkel filed surrebuttal testimony that identified the source of the input values that he portrayed as values used by the FCC when it ran its cost model for Arizona. Immediately after I testified in Phoenix on July 19, 2001, I began investigating Mr. Dunkel's claim that the source he identified includes the values for inputs used by the FCC to estimate feeder and distribution investments. This testimony presents the results of that investigation.

Q. DID YOU INVESTIGATE MR. DUNKEL'S CLAIM THAT HE USES THE FCC'S INPUT VALUES IN HIS RUN OF THE HAI 5.2A MODEL [DUNKEL SURREBUTTAL, P. 1]?

A. Yes. To investigate Mr. Dunkel's claim that he uses FCC specified input values in his run of the HAI 5.2a model, I reviewed the FCC's Tenth Report and Order[1] and the User Manual for the FCC's cost model,[2] and Debra Stump, a consultant on my staff, contacted FCC staff to confirm my findings.

Q. DID THIS REVIEW CONFIRM YOUR EARLIER CONCLUSION THAT MR. DUNKEL'S RUN OF HAI 5.2A DOES NOT REFLECT THE FCC'S SPECIFIED VALUES FOR KEY INVESTMENT INPUTS? [FITZSIMMONS REBUTTAL, P. 62]

A. Yes. My investigation confirms that Mr. Dunkel does not use the FCC's specified values for feeder or distribution investment inputs in his run of the HAI 5.2a model. Mr. Dunkel states that "[t]he FCC inputs that I used are the FCC inputs exactly as used by the FCC in the actual run that the FCC used to determine universal service fund eligibility for Qwest in Arizona."[3] This claim is inaccurate.

Mr. Dunkel apparently uses input values from the worksheet titled "User Adjustable Inputs" in the file "AZ Mountain Bell-Arizon_Default

---

1 *Federal-State Joint Board on Universal Service, Forward-Looking Mechanism for High Cost Support for Non-Rural LECs,* Tenth Report and Order, CC Docket Nos. 96-45 and 97-160, FCC 99-304 (rel. October 21, 1999) ("Tenth Report and Order").

2 Le, Hung and W. W. Sharkey, "The HCPM/HAI Interface for a Cost Proxy Model Synthesis: A User Manual," Federal Communications Commission, March 26, 1999 ("User Manual").

3 Dunkel Surrebuttal, p. 1.

Scenario_WC.xls," which he downloaded from the FCC's website.[4] He claims that these are the input values specified by the FCC. He is mistaken. A review of the FCC's model documentation shows that the FCC's input values for distribution and feeder investment are not located in this worksheet. The feeder and distribution investment input values in this worksheet are not the values specified by the FCC and are not the values used in the FCC's run of their model.

Q. WOULD YOU PLEASE ELABORATE ON WHAT THE USER MANUAL DESCRIBES RELATIVE TO THE USE OF INPUT VALUES?

A. To run the FCC's model, the user selects an HCPM input file and a HAI scenario.[5] In October 1999, the FCC adopted input values for the HCPM model and described these values in the Tenth Report and Order.[6] These FCC-specified values are located in the file "HCPM_inputs_October 1999.xls."[7] This file is downloaded automatically when a user downloads the FCC's model. A copy of this file is attached as Exhibit WLF-5. The inputs described in this file match the inputs specified by the FCC in its Tenth Report and Order, and they match the

---

4 Dunkel Surrebuttal, p. 1 and Schedule WD-20. The file is available by downloading the "Results Zip File" available at http://www.fcc.gov/ccb/apd/hcpm/.

5 User Manual, p. 5.

6 "In this Report and Order, we complete the selection of a model to estimate forward-looking cost by selecting input values for the synthesis model we previously adopted." Tenth Report and Order, paragraph 2.

7 The FCC-specified values are also described in documentation provided when a user downloads the FCC model from the FCC's website. See Bush, CA, DM Kennet, J Prisbrey, and WW Sharkey, Federal Communications Commission, and Vaikunth Gupta, Panum Telecom, LLC, "Computer Modeling of the Local Telephone Network," October 1999, Appendix A, p. 22.

values listed in the "FCC" column of Exhibit WLF-3 of my rebuttal testimony.[8] They are not the values for feeder and distribution investments used by Mr. Dunkel in his run of the HAI 5.2a model.

When the FCC's model is run, the HCPM input values from the file "HCPM_inputs_October 1999.xls" are written to a file called "Hcpm_current_inputs.xls."[9] This new file contains the values for the HCPM inputs that are actually used when the model is run. When the HCPM is run with the "HCPM_inputs_October 1999.xls" file, the values for feeder and investment inputs match Exhibit WLF-3.

Q. DID YOU VERIFY YOUR FINDINGS WITH EXPERTS AT THE FCC?

A. Yes. FCC staff confirmed that the inputs listed in the "User Adjustable Inputs" worksheet of the file cited by Mr. Dunkel are the HAI 5.0a default inputs.[10] They are *not* the FCC's inputs to the HCPM portion of its model. In some cases, such as SAI and fiber feeder investments, they are no longer even supported by proponents of the HAI model. The HCPM inputs are selected by the user before running the FCC's model. These inputs are in a different format than the HAI inputs for distribution and investment and are not included as inputs in the "User Adjustable Inputs" worksheet. The only FCC-specified input values listed in this worksheet are inputs related to the FCC model's switching, interoffice, and

---

[8] The "Fiber Feeder Investment per foot" input values in the "FCC" column of Exhibit WLF-3 are weighted averages of the FCC's specified input values. The weighting is done to translate the FCC-specified values into Arizona-specific values that are compatible with the HAI 5.2a model.

[9] User Manual, p. 6.

[10] Telephone conversation with the FCC Staff, July 24, 2001.

expense modules.

Q. DID YOU REPLICATE THE FCC MODEL RUN THAT IS ON THE FCC'S WEBSITE?

A. Yes, I replicated the FCC's model run that produces the worksheet cited by Mr. Dunkel, "AZ Mountain Bell-Arizon_Default Scenario_WC.xls." The values for the feeder and distribution investment match the values from the FCC's Tenth Report and Order. They are not the values used in Mr. Dunkel's run of the HAI 5.2a model. For example, Table 1 compares the input values for SAI indoor investment from the FCC's Tenth Report and Order, the "Hcpm_current_inputs.xls" file created when I replicated the FCC model run, and Mr. Dunkel's run of HAI 5.2a. The values used by Mr. Dunkel for this input are actually the default values from HAI 5.0a, which is not supported by any party in this proceeding.

Table 1
Comparison of Input Values for SAI Indoor Investment ($)

Lines	FCC 10th Report and Order	WLF run of FCC model ("hcpm_current_inputs.xls")	Dunkel run of HAI 5.2a
50	220	220	98
100	333	333	148
200	665	665	296
400	1,331	1,331	592
600	1,996	1,996	888
900	2,770	2,770	1,232
1200	3,993	3,993	1,776
1800	5,539	5,539	2,464
2400	7,536	7,536	3,352
3600	11,079	11,079	4,928
5400	16,618	16,618	7,392
7200	21,708	21,708	9,656

Q. WHAT WERE THE RESULTS OF THESE RUNS OF THE FCC'S MODEL?

A. When I ran the "wire center" option, using the HCPM inputs file described above and attached as Exhibit WLF-5, the model produced the same output worksheet that is available on the FCC's website.

In addition, I viewed the results of the same run by density zone, rather than by wire center. Like the HAI 5.2a model presented by Mr. Denney in this proceeding, the FCC's model allows the user to display results by density zone or by wire center. As Mr. Denney describes, "the [HAI 5.2a] Model calculates per-unit UNE costs, network interconnection costs, and the cost of universal service. At the user's discretion, these results can be displayed by line density range, wire center, or individual customer location 'cluster.'"[11]

The run of the FCC model is meant to estimate the cost of providing basic local service for use in determining universal service funding. I agree with Mr. Denney that the FCC model is not designed to produce UNE costs.[12] The loop cost estimate from the "density zone" run of the HCPM/HAI, consistent with the FCC's specified input values, is $17.77.

Q. WOULD YOU PLEASE SUMMARIZE YOUR COMMENTS?

A. The FCC's HCPM User Manual states: "Users should be aware that there is no linkage between HAI inputs and HCPM input files. It is the responsibility of the

---

[11] Denney Direct, p. 13.

[12] Denney Direct, p. 19.

user to make appropriate selections for each of the model components." [13] Rather than heed this warning, Mr. Dunkel selected inappropriate input values for the run that he presents in this proceeding. Many of the feeder and distribution input values that he portrays as FCC values are actually default values from the HAI 5.0a model, which is not supported by any party in this proceeding. As a result, Mr. Dunkel's run of the HAI model does not provide meaningful information for consideration in this proceeding.

Q. DOES THIS CONCLUDE YOUR SURREBUTTAL TESTIMONY?

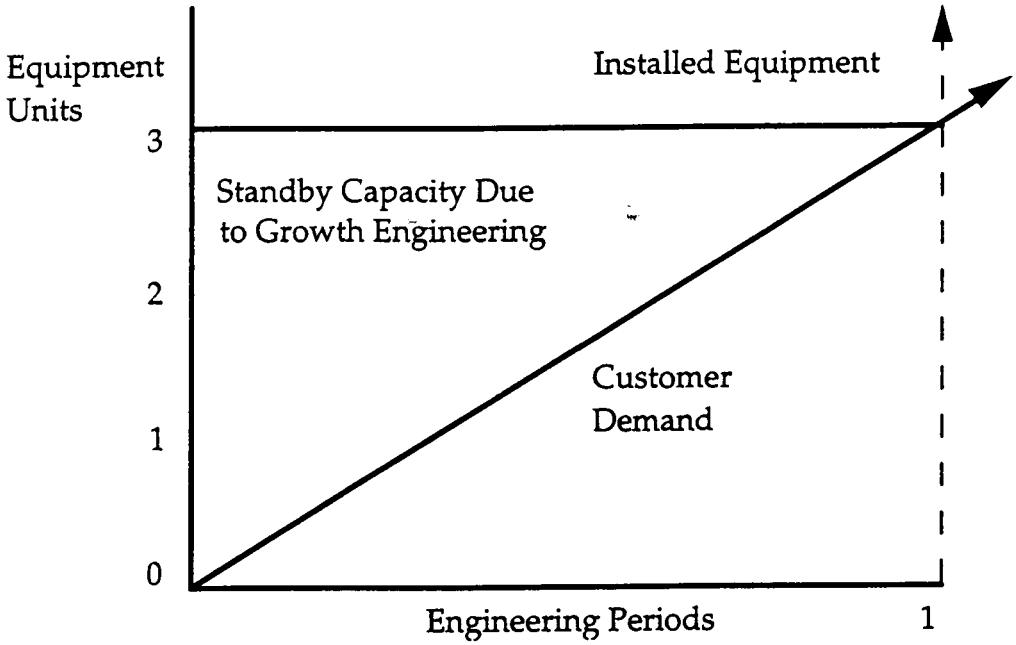
A. Yes.

[13] User Manual, p. 6.

Growth Engineering Standby

Standby capacity due to growth engineering is the amount of capacity periodically engineered into some switch components to assure that there is capacity available to provide service to users over a specified engineering period. This type of capacity occurs when the anticipated growth in customer demand necessitates installation of more than one piece of equipment (three, in the example below) per engineering period.

This is done primarily to minimize costs. If a switch is installed and capacity is added one unit at a time, only as demand occurs, the continual engineering and installation would create a great expense. Similarly, if switches are installed fully equipped to meet their maximum capacity, there initially may be enough standby capacity to last ten years. This would create a great initial expense.



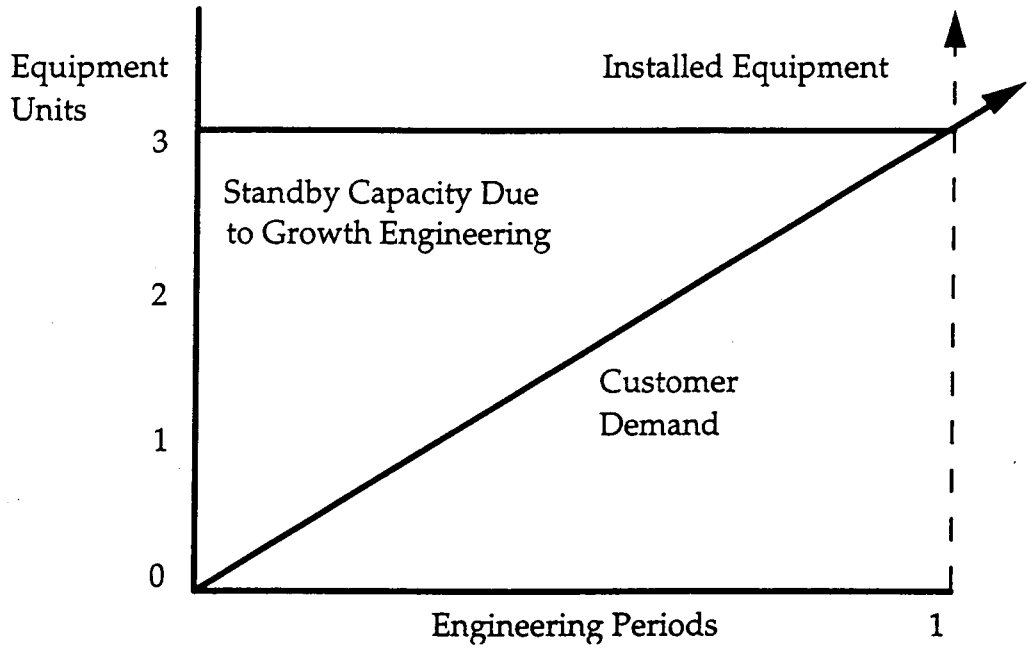
Standby capacity due to growth engineering is handled on an average basis by the Utilization Factor (UF) which will be discussed later.

Modularity Standby

Standby capacity due to modularity is the amount of standby capacity in some switch components due to one unit of equipment being installed with more capacity than can be used during one engineering period. This is sometimes referred to as "lumpiness" of investment and is a situation that occurs with switching equipment that is purchased in modules with large capacities.

Standby capacity due to modularity differs from standby capacity due to growth engineering in the number of units installed and the number of engineering periods. Modularity spare occurs when one unit, installed at the beginning of an engineering period, has more capacity than can be used during the engineering period. Standby capacity due to growth engineering is a result of more than one piece of equipment being installed at the beginning of an engineering period because one piece of equipment does not have enough capacity to last the entire period.

To see this difference visually, compare the graph showing Growth Standby to the graph below showing Modularity Standby.



Standby capacity due to modularity is also handled on an average basis by the Utilization Factor (UF) which will be discussed next.